Contract No. 13-06: FINAL REPORT

Isaac Harris Cary Memorial Building Renovation
1605 Massachusetts Avenue
Lexington, Massachusetts

Mills Whitaker Architects LLC
PO Box 750089
Arlington MA 02474

18 January 2013

CARY MEMORIAL BUILDING RENOVATION

Final Report / 18 January 2013

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EXECUTIVE SUMMARY

The Ad hoc Cary Memorial Building Program Committee (AhCMBPC), established by the Board of Selectmen in May 2012, was charged with reviewing the June 2011 CMB Evaluation Report to determine appropriate improvements for public benefit and to make recommendations to the Board of Selectmen. The Committee selected a Designer and commenced work in July 2012, meeting on a monthly basis through January 2013. The Committee recommends an integrated approach to improvements that will address upgrades to life safety (including accessibility), building systems and facility usability. The project cost of this integrated approach, assuming timely continuation of the outlined process, is approximately $8.5 million.

INTRODUCTION

Cary Memorial Building

The Isaac Harris Cary Memorial Building was constructed in 1927-1928 as a memorial gift from his daughters, Eliza Cary Farnham and Susanna E. Cary. The intended use of the facility, as outlined in the daughters' wills, was to promote the Town's educational and community life. The building has served the citizens of Lexington continuously since its dedication, hosting events such as public meetings, exhibits, performances and numerous other activities that meet the original intentions of the memorial gift. The history of the building has been documented in various sources and was summarized in the prior study's report.

Committee Charge

An evaluation of the Cary Memorial Building was performed in 2010-2011 to assess its current conditions and recommend appropriate improvements for its continued service to the Town. A report by Mills Whitaker Architects, the selected Designer that worked on the building evaluation, was published in June 2011. The report described the building's interior and exterior conditions and recommended work that included upgrading aging systems, making code improvements and enhancing the functionality of the facility. The study was well received and this subsequent study was commissioned by the Board of Selectmen in order to review the public merits of the proposed work scope. Adopted on May 21, 2012, the Ad hoc Cary Memorial Building Program Committee's charge was as follows:

> *"To evaluate the recommendations of the Cary Memorial Building Evaluation, completed June 1, 2011, and make recommendation to the Board of Selectmen on the appropriate scope of work."*

The scope of the Committee's work included reviewing the prior study report, seeking public input into the recommended prioritized scope, enhancing the schematic design and updating the costs.

Committee Members & Participants

The Committee was established with five members representing the following groups:

- Center Committee Member: Fred Johnson, Chair
- Cary Lecture Series Member: Nancy Shepard, Vice Chair
- Historical Commission Member: Wendell C. Kalsow
- School Committee Member: Bonnie E. Brodner
- Selectmen: Hank Manz

In addition to the five members, the following liaisons and staff members also participated:

- Capital Expenditure Committee: William Hurley
- Permanent Building Committee: Gary Lerner
- Appropriations Committee: Richard L. Neumeier
- Communications Advisory Committee: Linda Roemer
- Director of Public Facilities: Patrick Goddard
- Town Manager's Office: Michelle Stevens

Mills Whitaker Architects LLC was selected as the Designer for the renovation study through the M.G.L. Chapter 7 process and assembled the following team:

Mills Whitaker Architects LLC:	Donald W. Mills, RA, LEED AP
Structures North Consulting Engineers:	John Wathne, PE (Structural)
Forte Engineering:	Steve Forte, PE (Mechanical)
The Green Engineer:	Chris Schaffner, PE, LEED AP (Energy Advisor)
Johnson Engineering & Design:	Eric Johnson, PE (Electrical)
Available Light:	Derek Barnwell, Lighting Designer
Acentech:	Ben Markam, Project Manager (Acoustics & AV)
B. N. Productions:	Anna Barbieri, Theatrical Systems Consultant
Born Illustration:	Michael Born (Renderings & Animations)
Daedalus Projects:	Delwyn Williamson, Cost Estimating Consultant

Schedule

The Committee assembled for their first meeting on July 18, 2012, and then met at least monthly up through January 7, 2013, for a total of eight meetings. The Committee's meetings were public and interested parties from the Town, such as Town Meeting Members and others, frequently attended and participated in the discussions. In addition to the regular monthly meetings of the full Committee, other meetings were held with the Architect and Consultants to develop program criteria and prepare pertinent information. These other meetings included a programming review and facility tour, with interested parties, to prepare a range of potential audiovisual improvement recommendations. Also, review of an "auralization" of Battin Hall, a computer simulation of acoustical improvements, was held at Acentech's offices in Cambridge for all who could attend. In early December 2012, the Committee Chair presented renovation recommendations in a report to the Community Preservation Committee. Upon completion of the Renovation Study, a public presentation was made to the Board of Selectmen on January 14, 2013.

RENOVATION STUDY PROCESS

Evaluate Recommendations of Prior Study

The Renovation Study commenced with a review and evaluation of the prior Cary Memorial Building Evaluation Study. The work scope and recommended improvements from the June 2011 study were reviewed in detail by the Committee, initially as a group and subsequently by each member and liaison on an individual basis, culminating in a survey ranking each item on a scale of 1 (no benefit) to 10 (substantial benefit) to prioritize the public benefit of each work scope item. The survey indicated that, with few exceptions, the prior study recommended work that was beneficial to the public in terms of the type and scope of improvements. The improvements, a total of 102 items, received an average ranking of 7.1 by the group. Only 3 of the 102 items ranked below a 5.0 while a strong majority (61) ranked higher than 7.5. The survey helped clarify the value of the prior study and establish the basis upon which to further define the schematic scope of improvements. A summary of the survey analysis and prioritization rankings is included in Appendix B of this report.

The Committee's detailed review of the prior study's recommendations resulted in the exclusion of six items from the scope of work (see Appendix B) and helped to establish a more simplified approach to defining the categories of improvements that are needed. In the prior study, the recommendations were organized, in response to a review of existing conditions, into the following categories of work:

- Accessibility Improvements
- Auditorium & Support Spaces
- Miscellaneous Improvements
- Exterior Structural Repairs
- Interior Structural Repairs
- Structural Modifications
- Mechanical – Fire Protection System Improvements
- Mechanical – Plumbing System Improvements
- Mechanical – HVAC System Improvements
- Electrical Improvements
- Acoustical Improvements
- Repairs and Improvements to Stage Rigging

While this detailed approach was useful for the Building Evaluation study process, the schematic work scope for the Renovation Study was organized into three integrated categories:

- Life Safety Improvements: code issues, accessibility, etc.
- Building System Improvements: upgrading of aging systems
- Facility Usability Improvements: enhancements to support use

These three categories are integrated and rely on each other in terms of creating the maximum public benefit of renovation improvements. A summary of the recommendations in each category, along with an outline specification of the improvements, is included in Appendix D of this report.

Further Review of Selected Project Components

The Renovation Study work by the Committee included a detailed look at several project components in order to prepare appropriate recommendations to the Board of Selectmen. These various project components included the following items:

- *Reviewed Current & Future Uses of the Building*: The Committee reviewed the current use policies of the Hall and Meeting Rooms, recognizing that the policy statement should be reviewed and updated while continuing to honor the terms of the memorial gift. Updating the policy statement was considered to be outside the scope of the current charge, but since it has not been done since 2004, the Committee recommends this be done very soon.

  The Committee also reviewed use options in discussion with Peter Lally, Manager of a similar facility in Lowell (Memorial Auditorium) that hosts a variety of programs that are targeted to enrich community life. While the facilities differ in some regards, the renovations planned for the Cary Memorial Building will make improvements that will better serve a variety of events such as lectures, musical performances and other activities that occur in Town. The meeting with Peter Lally helped the Committee to confirm the scope and need of the planned improvements.

- *Prepared Acoustical Model of Battin Hall*: The auditorium space of the Cary Memorial Building is very well suited to orchestral music and similar events but is poor when speech intelligibility is required. In order to evaluate proposed improvements to the Hall, a 3-D computer simulation of the space was prepared to model existing conditions and evaluate the improvements. The computer model, called an "auralization," allowed the Committee to hear the effect of changes to the HVAC system (system upgrades to reduce room noise), replacement of the sound system (to improve speech clarity) and other improvements.

  The model was also used to evaluate the effect of two items that were initially considered to be optional but, as a result of the auralization, were determined to be very favorable for making significant improvements. One of these was replacement of the air-cooled chiller and relocation away from the auditorium windows. The other was the provision of variable acoustic treatment to reduce reverberation for speech-only events (concealed retractable absorptive panels). These two items were initially considered as "alternates" in the budget until the auralization demonstrated their significant benefits to acoustical performance. The chiller replacement has the added benefit of replacing a 12-year old chiller, with an assumed life of 20 years, with more efficient equipment that will reduce operating costs.

  The auralization was demonstrated in a "listening studio" at the offices of Acentech. This setting allowed an effective simulation of the 3-D computer model of Battin Hall. The presentation was attended by a majority of the Committee members along with other interested parties. Acentech offered to provide a selection of the audio files to the Town for use in setting up a website for reaching a broader audience with this information, but due to current staffing issues in the Town's IT department, this was not implemented.

- *Prepared Programmatic Requirements for Audiovisual Improvements*: A meeting with interested Committee members and other parties was held to review issues related to existing conditions and possible improvements to the audiovisual systems for the building including within Battin Hall, the Lobby, Green Room and the meeting rooms. The results of this discussion are included in a programming report prepared by Acentech in Appendix C of this report. The report included descriptions and budgets for each AV issue that was discussed with the group during the programming meeting held on site.

  Subsequent to issuance of the overall report and its respective budgets, the Committee met to review each program component and its related costs, agreeing to include only those program elements that they believed will provide the most public benefit, resulting in acceptance of approximately half of the full scope of improvements (see Appendix C).

- *Modifications of Proposed Plans*: The Renovation Study process led to a few changes to the proposed floor plans as noted below. These changes are illustrated in the drawings that are included in this report in Appendix A.

  Wheelchair Access to Stage & Green Room – The former study plans provided an access door at the former orchestra pit stairway that would lead to the concealed wheelchair lift serving the Stage and Green Room areas. This access door location required that the permanent thrust stage be no wider than the existing temporary thrust stage. The updated proposal widens the thrust stage to abut the angled wing wall and relocates the wheelchair access door into a reconfigured version of the adjacent stairway.

Civil Room Accessibility Deferred – The former study proposed to provide an accessible path to the Civil Room by reconfiguring the front row of balcony seats and aisle stairs. This work would require replacement of the front row of central balcony chairs with removable chairs and alteration of the aisle stairways. Since the Civil Room is one of three similarly sized rooms (Ellen Stone, Legion, Civil), it was the Committee's belief that a convertible solution for providing access to this one room was more expensive and disruptive than the benefit gained by the disabled. So, a variance from the Massachusetts Architectural Access Board (MAAB) regulations should be sought during subsequent design, requesting the Civil Room to remain as-is. Since the Town would not schedule the room for public meetings, there is a very high probability that the MAAB would grant such a variance, as this has been their practice for similar historic buildings with particularly challenging configurations.

Confirmed Adequacy of Existing Roof Truss Structure – The prior study noted that the original steel roof trusses appeared to be undersized and recommended that the structural capacity be evaluated. The current study included an evaluation of the trusses and it was determined that they are adequately sized and no reinforcement work is required. This part of the current study did not result in any changes to the floor plans or work scope.

Relocated and Replaced Chiller for Cooling & Acoustical Needs – The prior study noted that significant noise is generated by the air-cooled chiller adjacent to the Hall and proposed to add sound attenuation to the chiller and sound isolating storms to adjacent windows. Following the auralization and chiller noise evaluation, it was determined that replacement and relocation of the chiller would significantly reduce sound impact on the Hall without requiring sound isolating storm windows. The existing chiller, installed in 2000 when the CMB was to serve temporarily as the Library, provides cooling for both the CMB and TOB. The 200-ton capacity assumes that both buildings will be fully occupied simultaneously during the day at the hottest time of year. Since the CMB and TOB serve different uses, the application of diversity standards for determining cooling loads has preliminarily estimated that a 120-ton chiller should meet the needs of both buildings and save on operating costs. Note that the chiller size will be confirmed during design. Refer to Appendix C for noise information and operating cost savings for this modification.

- *Prepared Animations & Illustrations of Battin Hall*: The most noticeable alteration to the Cary Memorial Building will be replacement of the temporary thrust stage with a proposed permanent thrust stage. Since this modification will affect multiple uses of Battin Hall, a series of animations were prepared to visually represent the effect of this change for three very different uses: public meetings, exhibits and performances. Each use has differing needs and the intent of the animations was to show how the presence of a permanent thrust stage will serve to enhance these uses while also improving the general appearance of the stage area. Note that the following specific uses were selected:

  Town Meeting: the permanent thrust stage provides a larger, safer and better-integrated presentation platform area for the activities related to public meetings.

  Quilt Show: the stage area can be equipped with removable guardrail system that, together with improved on-stage lighting, expands available floor area for exhibits.

  Lexington Symphony: the permanent thrust stage is visually compatible with the building's historical character and is a broader area to enhance performance use.

Proposed Plans, Outline Specifications & Project Budget

Updated floor plans for the proposed renovations are included in Appendix A of this report. The drawings illustrate existing conditions, proposed selective demolition and updated floor plans and site plan layouts. Proposed changes to the existing floor plans are intended to retain the historic character of the building. The changes were thoroughly explained and documented in the prior study and will not be reiterated at length in this report. In summary, the following is proposed:

- Improve acoustics, audiovisual systems, thrust stage and lighting in Battin Hall;
- Renovate Green Room below the stage to restore its historic use with upgrades;
- Provide handicap access to Stage, Green Room, Bird Room and Battin Hall seating areas;
- Improve usability, configuration, acoustics and audiovisual systems in Estabrook Hall;
- Improve audiovisual systems in the Lobby, Ellen Stone, Legion Room and Bird Room;
- Improve and expand public toilet rooms in the Basement Level for better functionality;
- Remove electrical switchgear from the Stage and provide the equipment in utility areas;
- Replace steam boilers with high efficiency hydronic boilers; replace air-cooled chiller;
- Provide reconstructed entrance ramp, drop off area & accessible parking spaces;
- Provide related life safety, HVAC and building system improvements as noted herein.

To complement the drawings, outline specifications were prepared to summarize proposed changes relative to the three categories of work: life safety, building systems and facility usability improvements. These specifications and summary descriptions are included in Appendix D.

In addition to the categories of work, several "alternates" were described in order to review the cost of certain work items and review those with the Committee. The alternates were related to accessibility for the Civil Room, replacement of the chiller, variable acoustics in the Hall, providing a dance surface for the stage and a range of audiovisual improvements for the facility. Upon review by the Committee, the replacement chiller, variable acoustics (retractable sound attenuation for speech only events) and some of the AV improvements were accepted. The accepted alternates have been incorporated into the project and are no longer considered to be alternates for the purposes of the project recommendations.

A project budget was established through a process of reviewing the outline plans and specs with a professional cost estimator, followed by more extensive review and discussion with the Committee. The cost estimates are included in Appendix E of this report. A summary of the budget relative to each work category is as follows:

$1,536,683	Life Safety Improvements (18.0%)
$3,969,763	Building System Improvements (46.5%)
$3,030,680	Facility Usability Improvements (35.5%)
$8,537,126	Preliminary Project Budget (100%)

The project costs include the cost of construction, soft costs and contingencies. The values include escalation based upon implementation of the following schedule:

May 2013 – March 2014	Design Development & Construction Documents; $548,836: Estimated Cost of A/E Services through CDs
May 2014 – January 2016:	Competitive Bidding and Construction Period; $7,988,290: Estimated Construction & A/E Bid/CA Costs; Additional escalation needed if schedule is extended

RECOMMENDATIONS

The focus of the Ad hoc Cary Memorial Building Program Committee (AhCMBPC), as charged by the Board of Selectmen, was to evaluate the recommendations of the CMB Evaluation study and make recommendations on the appropriate scope of work. The Committee recommends an integrated project of approximately $8.5 million be implemented in order to make appropriate improvements to life safety (18.0%), building systems (46.5%) and facility usability (35.5%) of the Cary Memorial Building. The project components outlined in this report will provide substantial public benefit to the Town by maintaining and improving the integrity of this important historical resource.

The Cary Memorial Building is largely unchanged from its original design, and the proposed improvements will serve to complement the building's character and enhance its use while improving life safety and handicap accessibility. The scope of recommendations is in alignment with the responsibility of the Town to maintain the building as was noted by Mr. Robert P. Clapp, Chairman of the Isaac Harris Cary Educational Fund, during his remarks at the 1928 Dedication:

> *The result of our work is now before you. We have tried to produce a building that will be of constant service to the community…. How far we have succeeded in our efforts is for you and our fellow townsmen to judge…. I ask you to keep in mind always the memorial character of the gift and the limitations which the donors have placed upon its use. Remember also that the "continued use" of the building for the authorized purposes was an object of solicitude on their part. This means maintenance and thoughtful care, not only this year and next year, but through all succeeding years.*

The Renovation Study has outlined the recommended work scope that, if implemented, will proceed in two subsequent steps as was described in the designer selection process for this study. The next step will involve design development, construction documentation and a construction cost estimate based on the completed drawings. Pending approval, the remaining step will be to select a contractor through competitive public bidding and then construct the renovation project. The intent of the anticipated project will be to provide appropriate improvements that enhance the intended public use of the building in keeping with the wills of Isaac Harris Cary's two daughters.

APPENDICES

A: Drawings – Existing & Proposed
B: Scope Prioritization Survey
C: Consultant Documentation
D: Recommended Improvements
E: Preliminary Budget Estimate

Isaac Harris Cary Memorial Building Renovation
1605 Massachusetts Avenue
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Contract No. 13-06

SITE PLAN

A-1 Site Plan – Existing
A-2 Site Plan – Demolition
A-3 Site Plan – Proposed

BASEMENT LEVEL

A-4 Basement Level – Existing
A-5 Basement Level – Demolition
A-6 Basement Level – Proposed

FIRST FLOOR PLAN

A-7 First Floor Plan – Existing
A-8 First Floor Plan – Demolition
A-9 First Floor Plan – Proposed

SECOND FLOOR PLAN

A-10 Second Floor Plan – Existing
A-11 Second Floor Plan – Demolition
A-12 Second Floor Plan – Proposed

ATTIC LEVEL

A-13 Attic Level – Existing
A-14 Attic Level – Demolition
A-15 Attic Level – Proposed

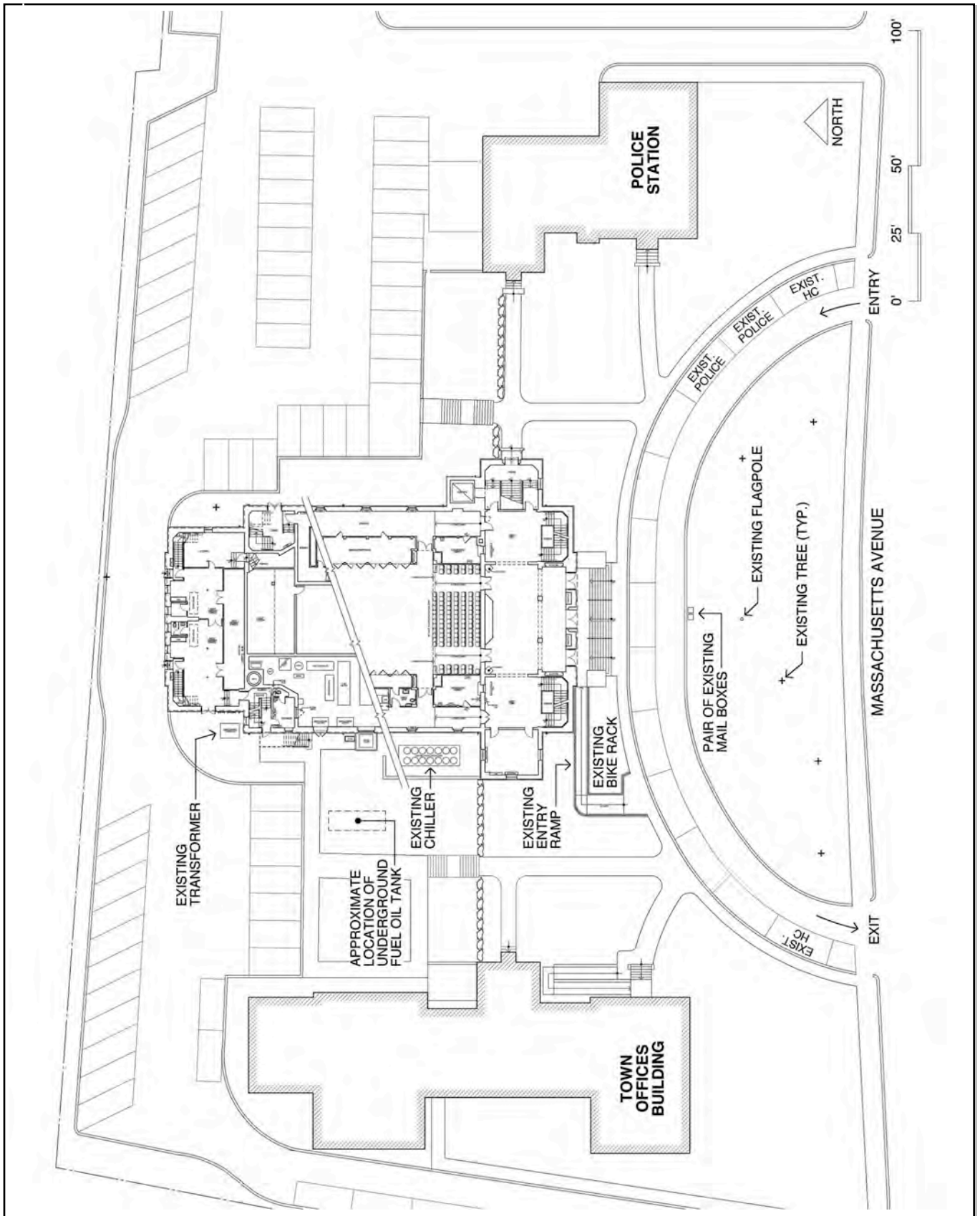
ROOF PLAN

A-16 Roof Plan – Proposed

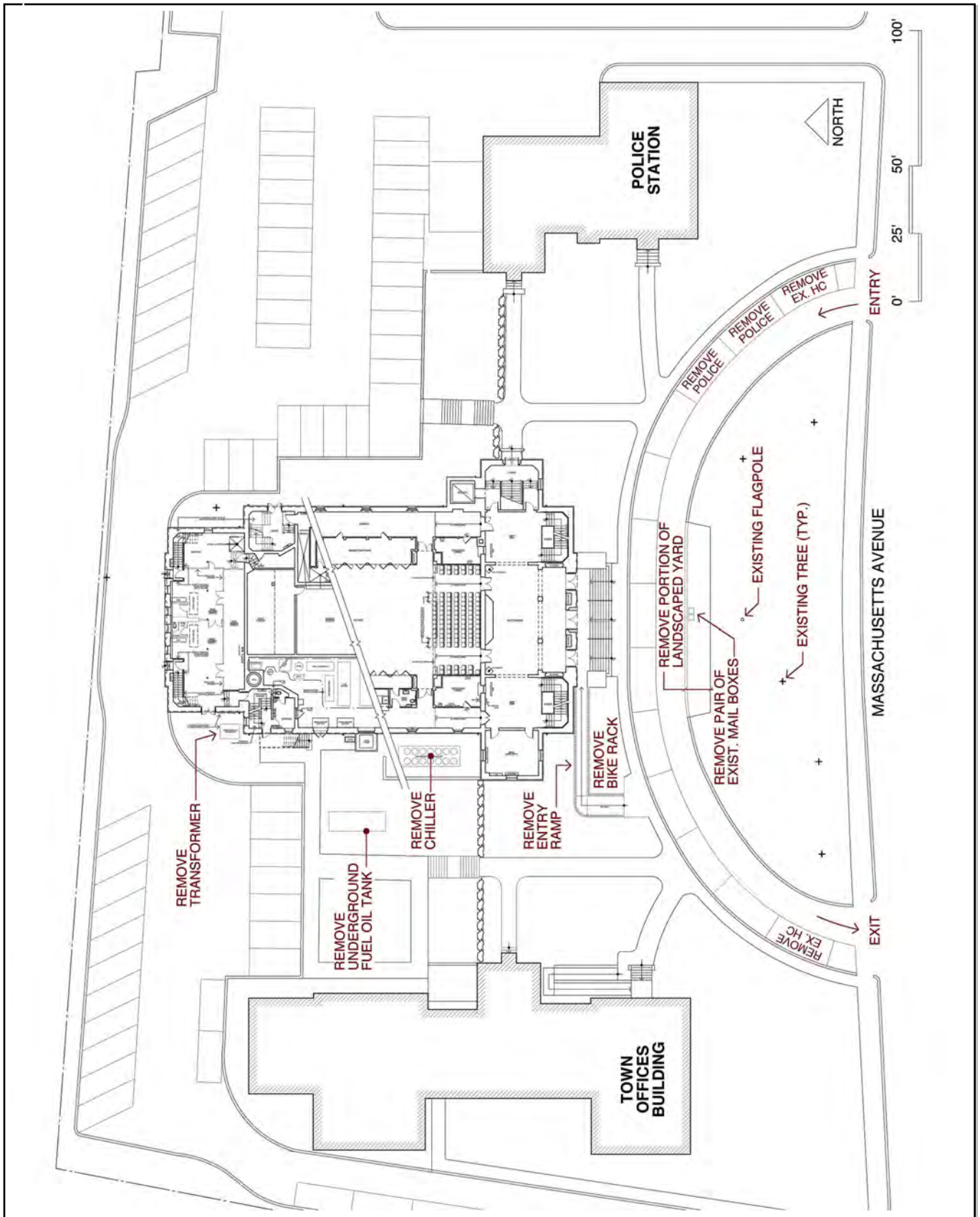
ILLUSTRATIONS OF SAMPLE USES

A-17 Stage Area for Public Meeting: Town Meeting Example
A-18 Stage Area for Exhibit: Quilt Show Example
A-19 Stage Area for Performance: Lexington Symphony Example

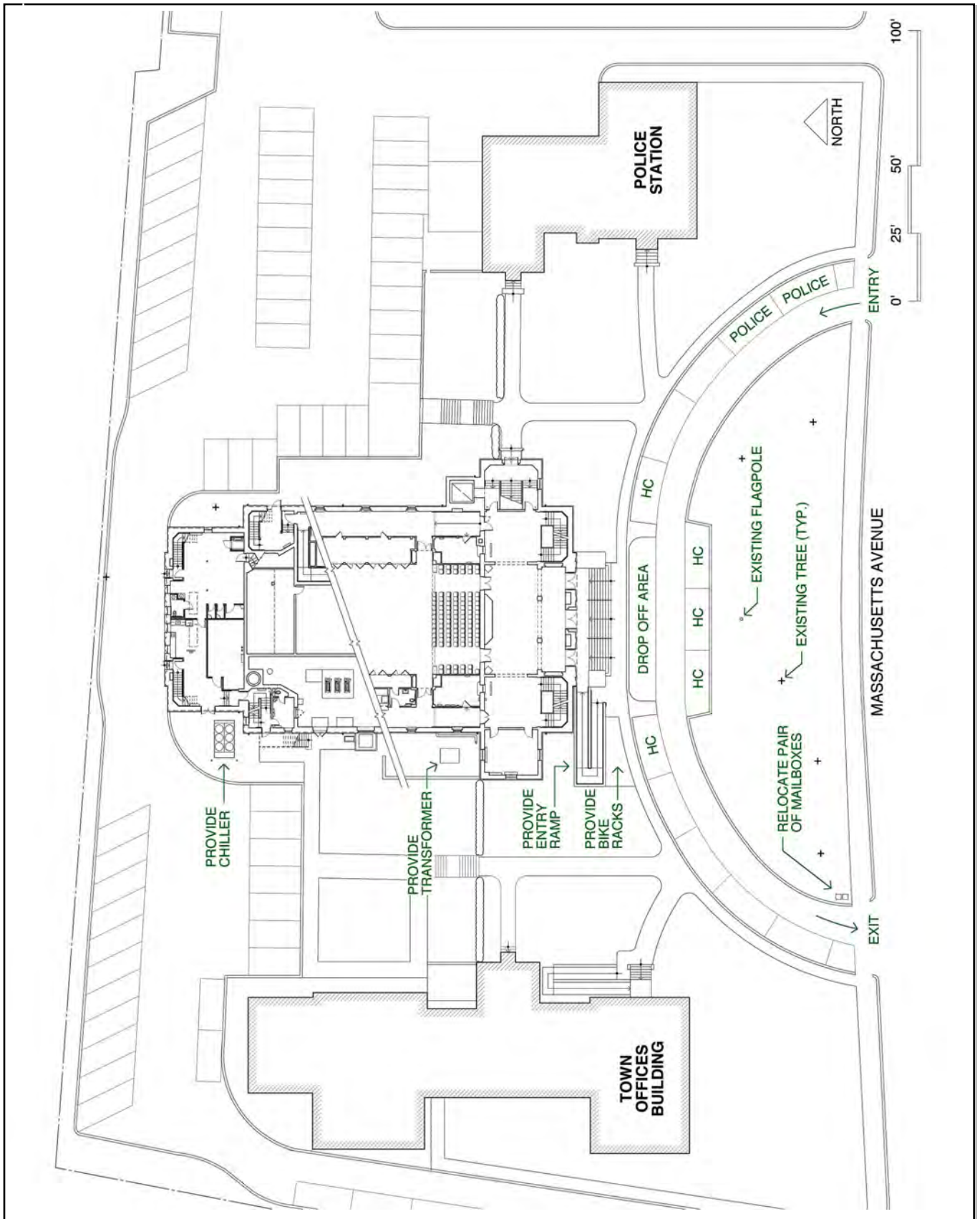
APPENDIX A
DRAWINGS – EXISTING & PROPOSED
Mills Whitaker Architects LLC



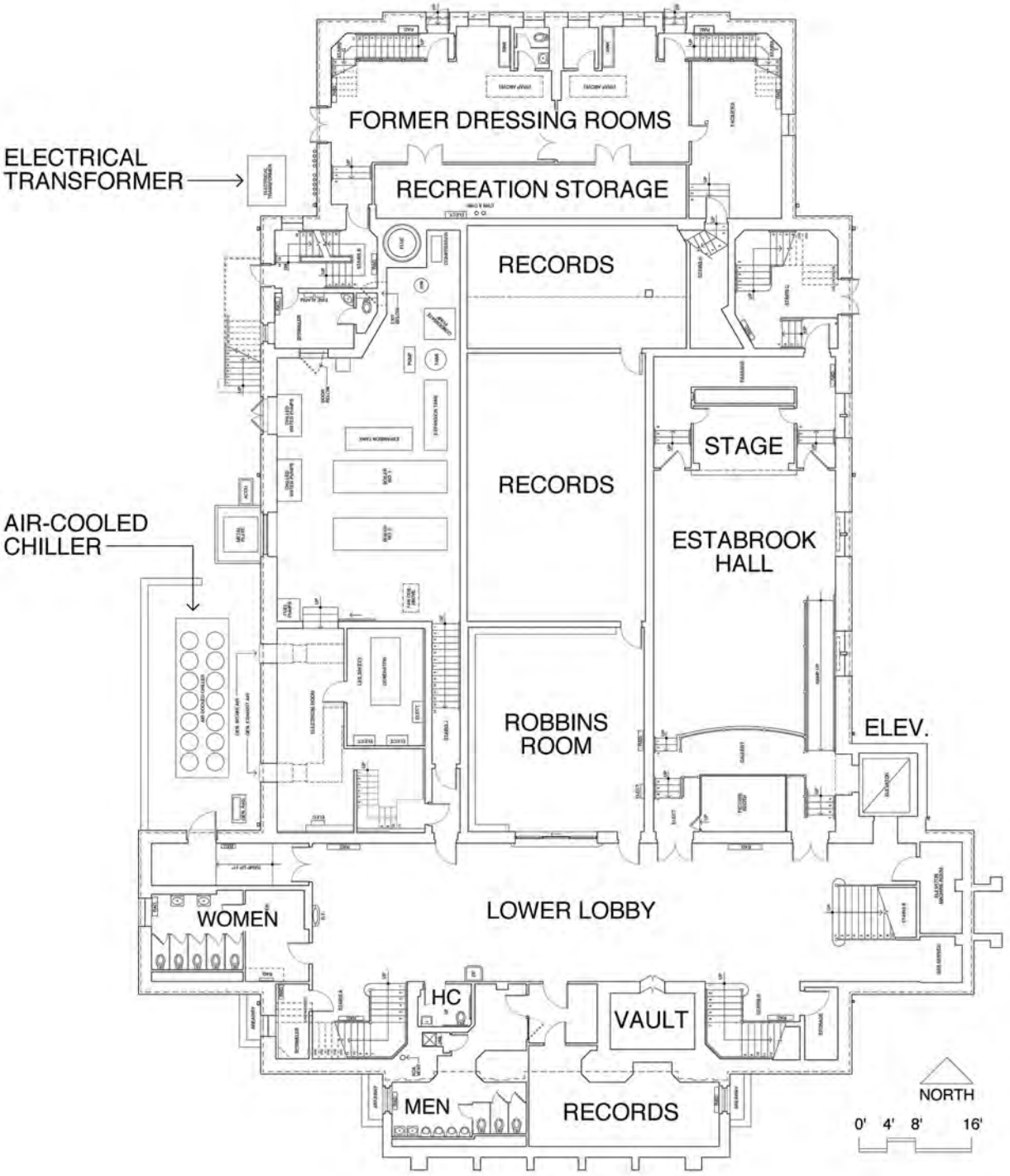
SITE PLAN - EXISTING



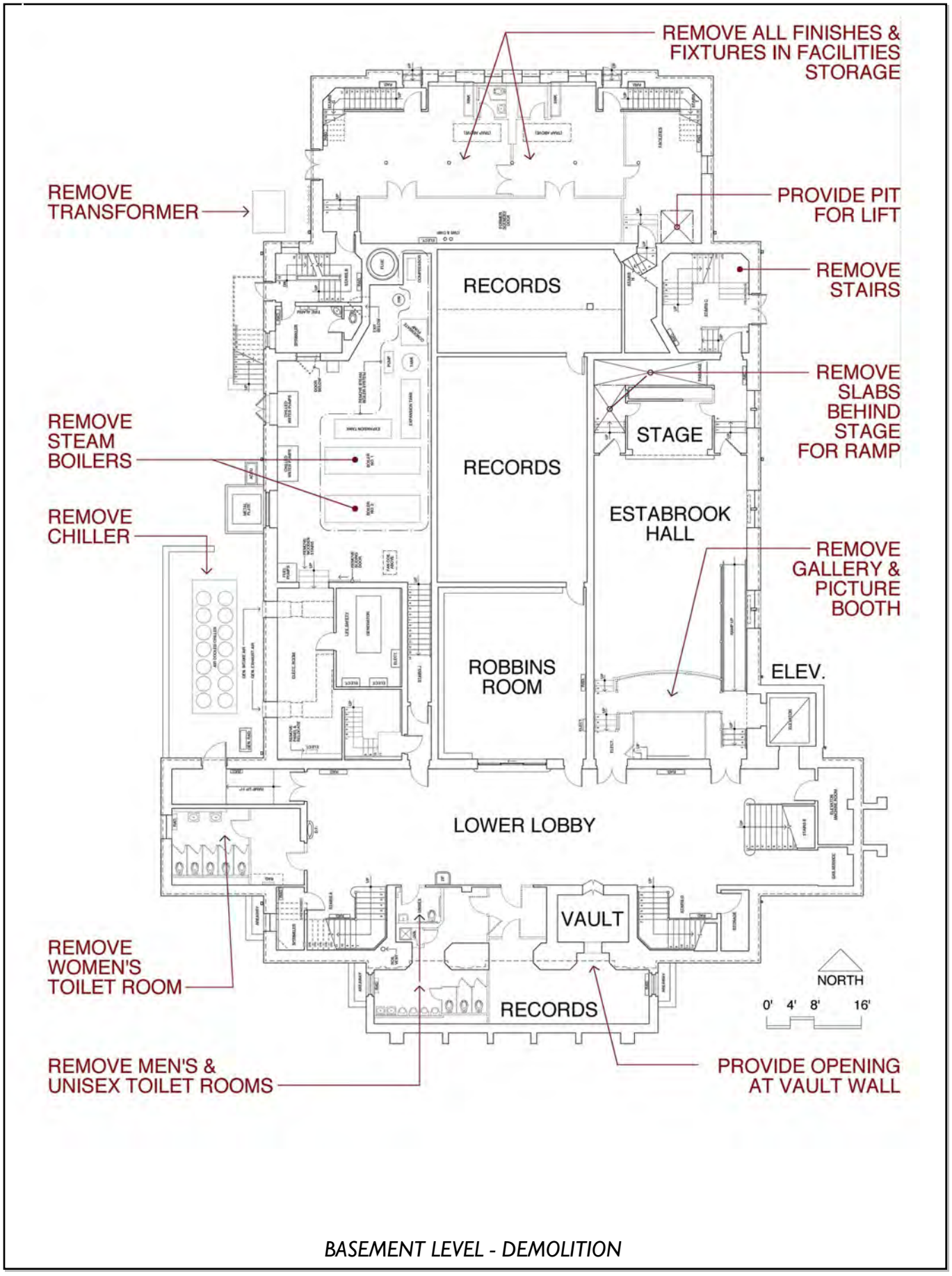
SITE PLAN - DEMOLITION



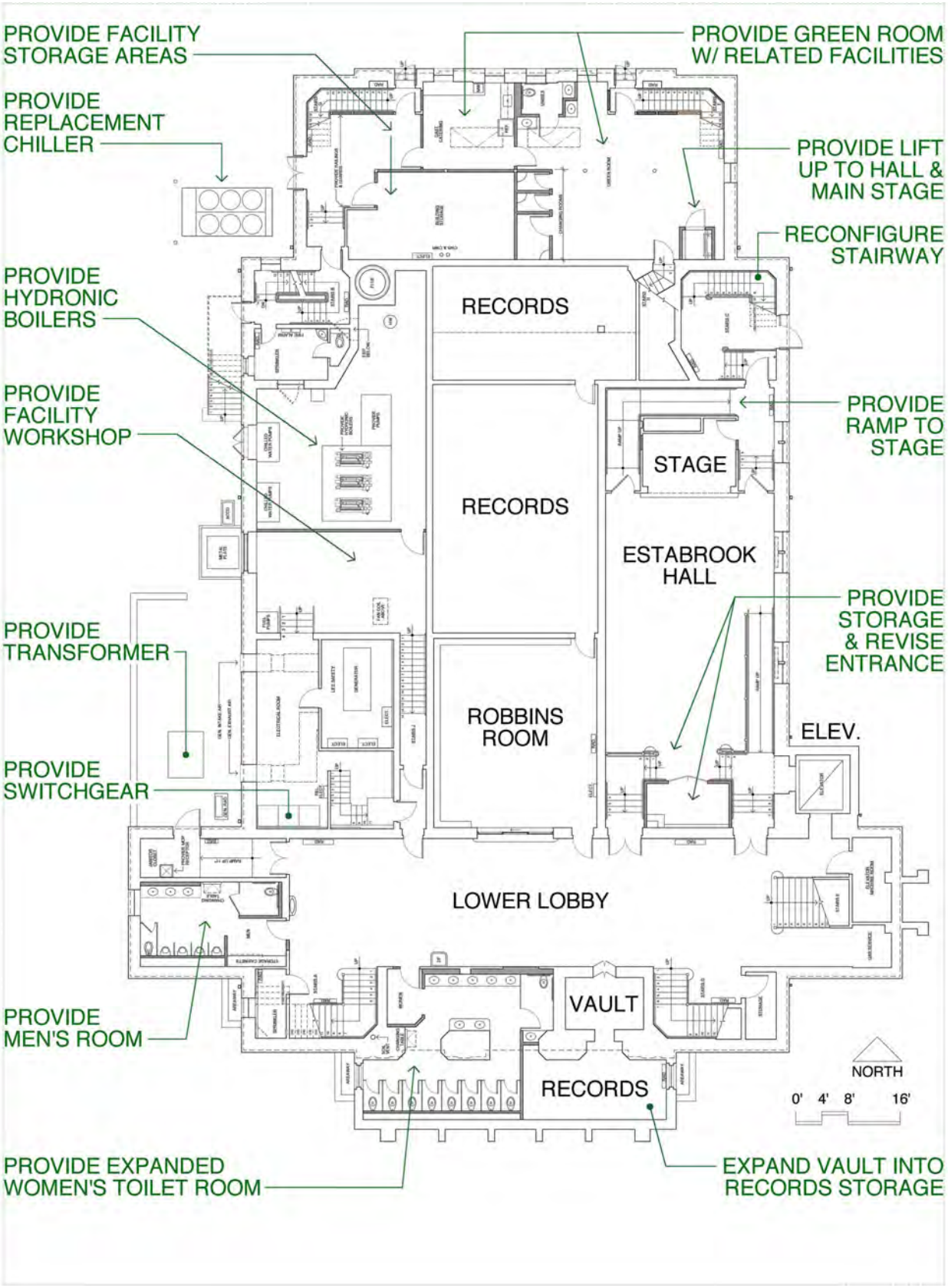
SITE PLAN - PROPOSED



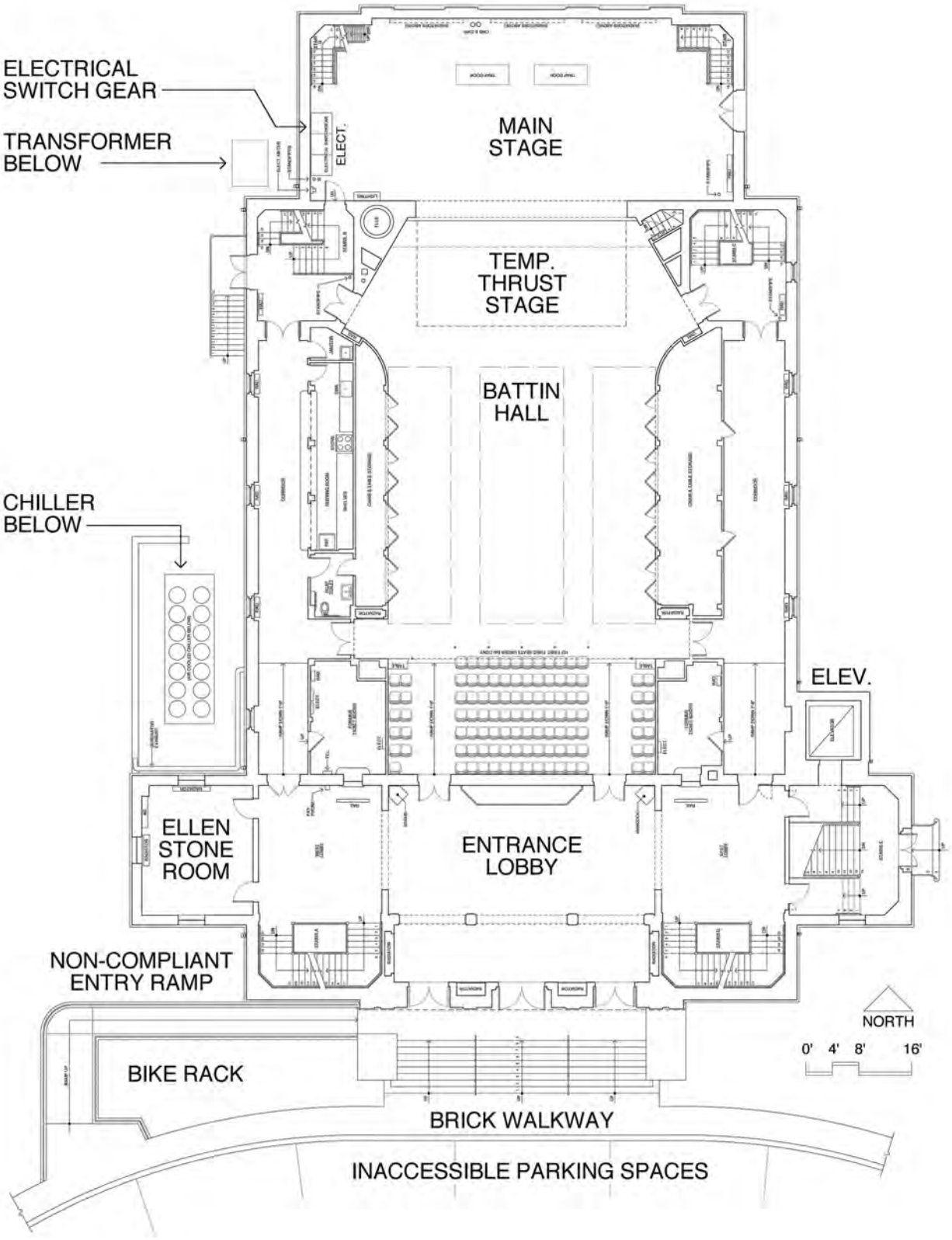
BASEMENT LEVEL - EXISTING



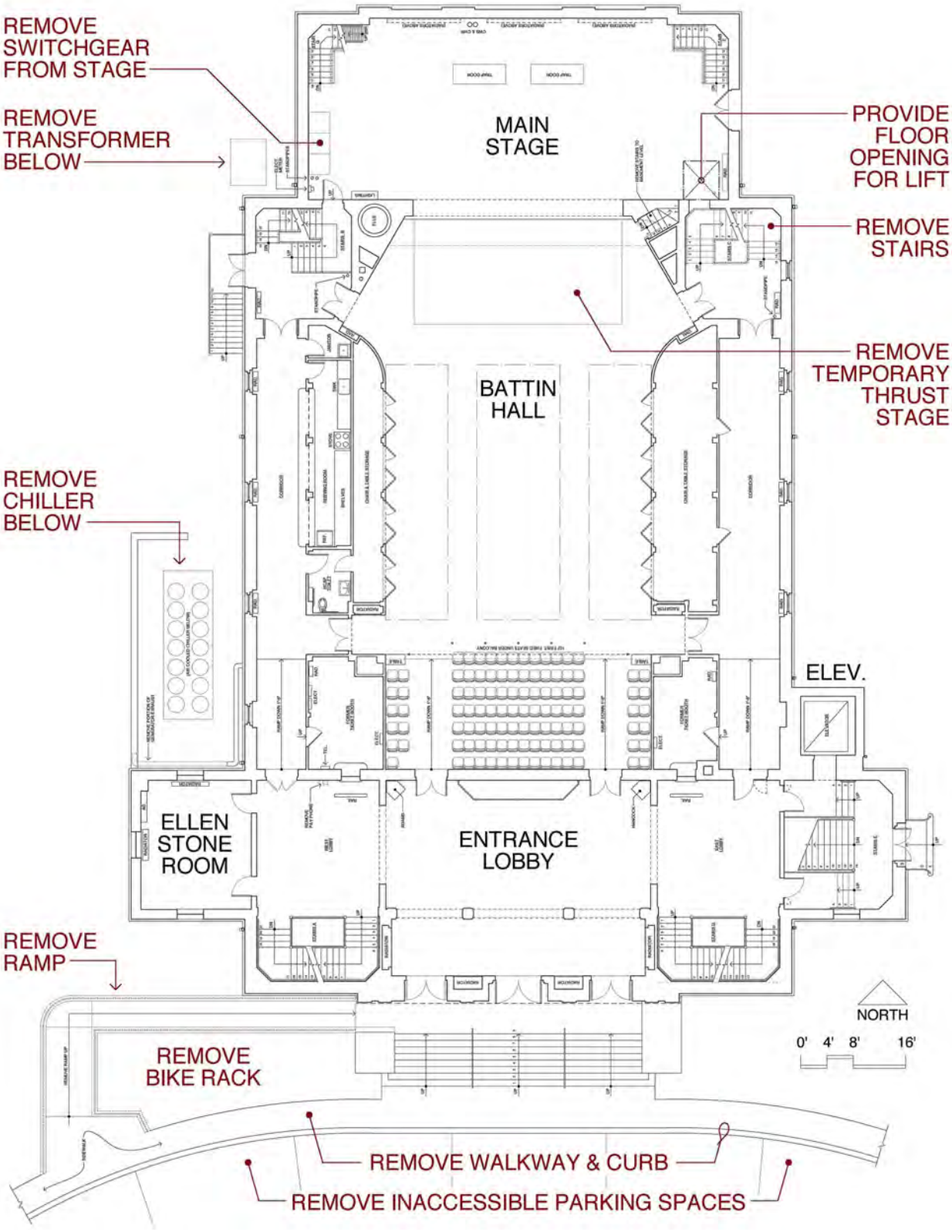
BASEMENT LEVEL - DEMOLITION



BASEMENT LEVEL - PROPOSED



FIRST FLOOR PLAN - EXISTING



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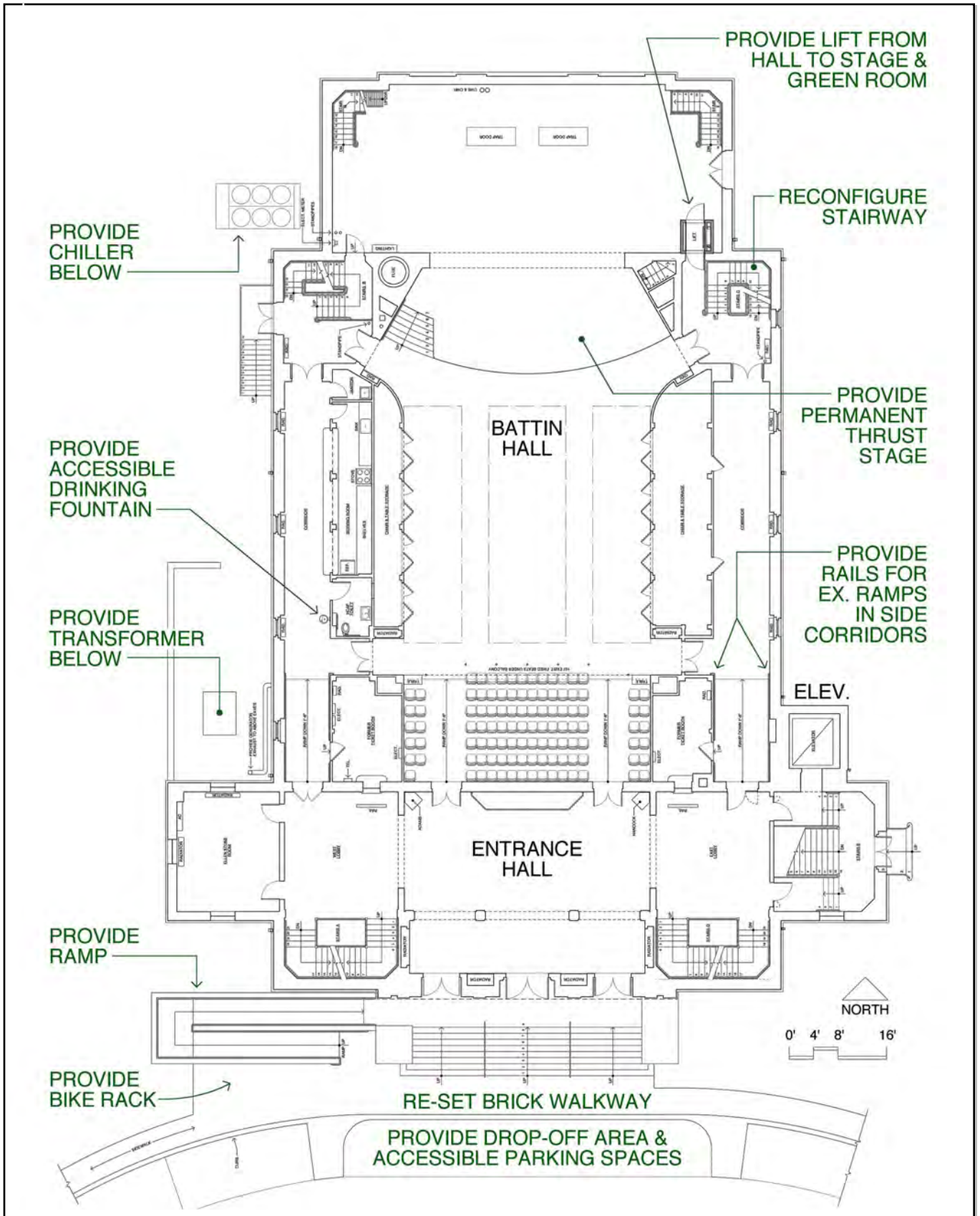
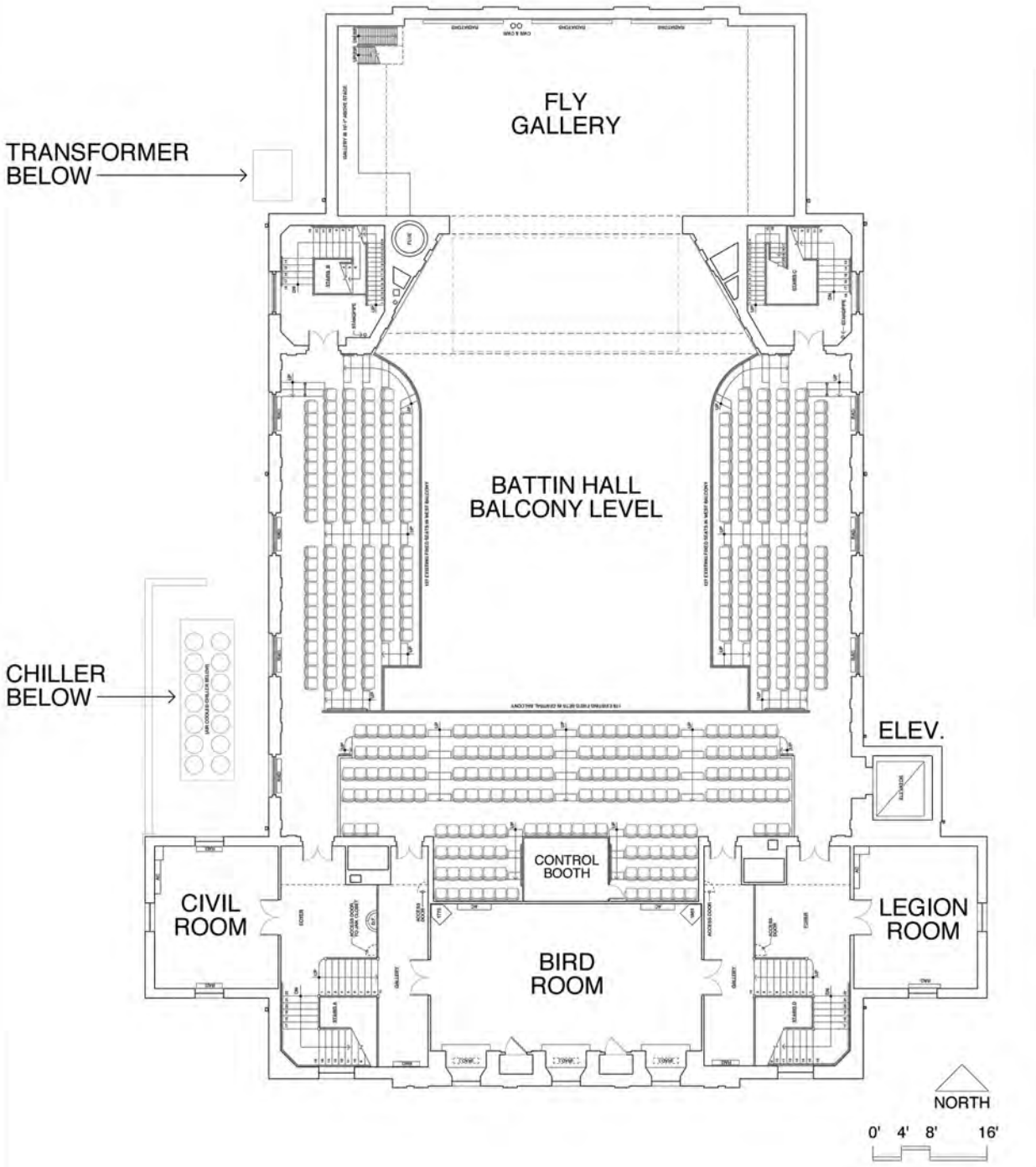
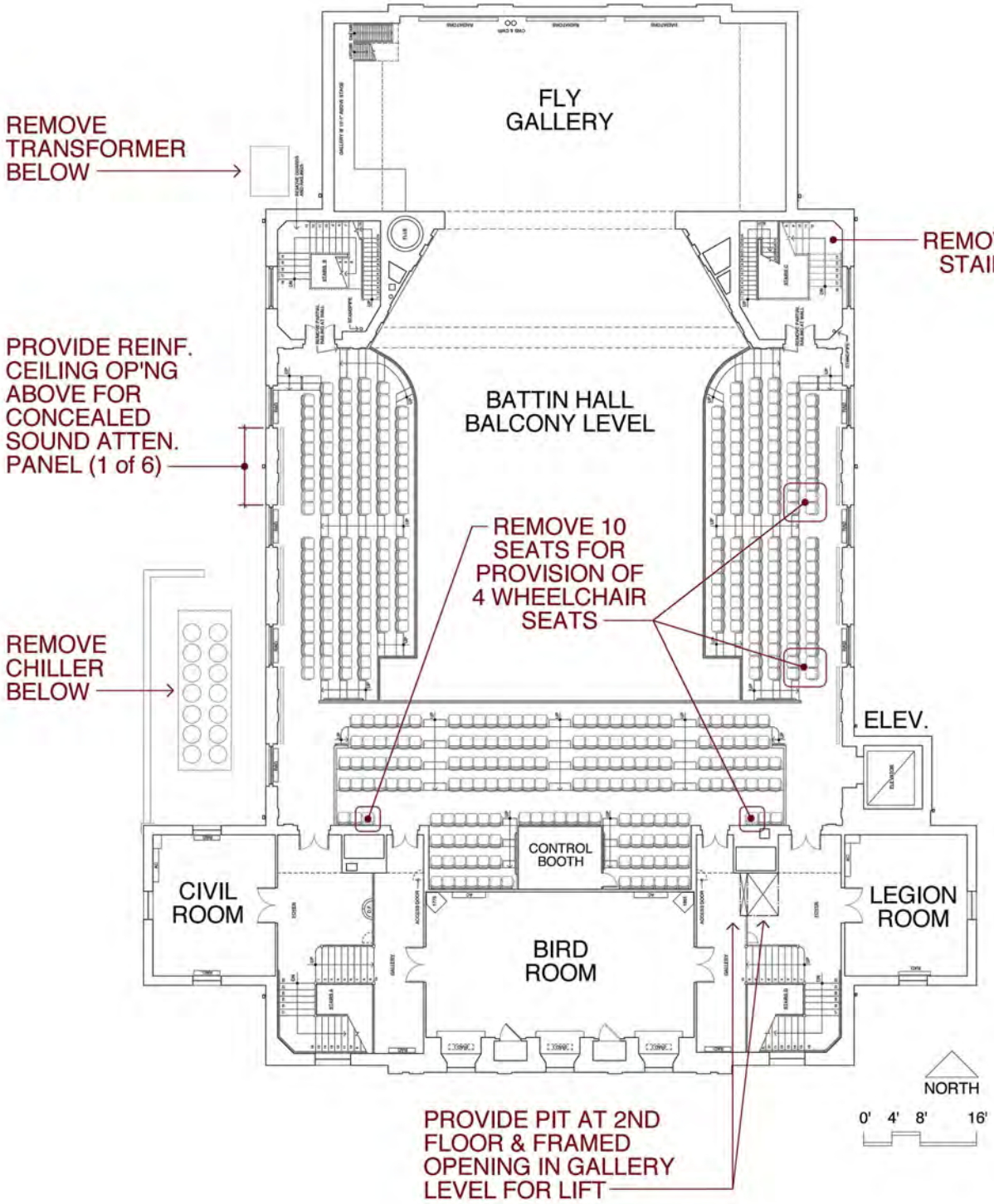


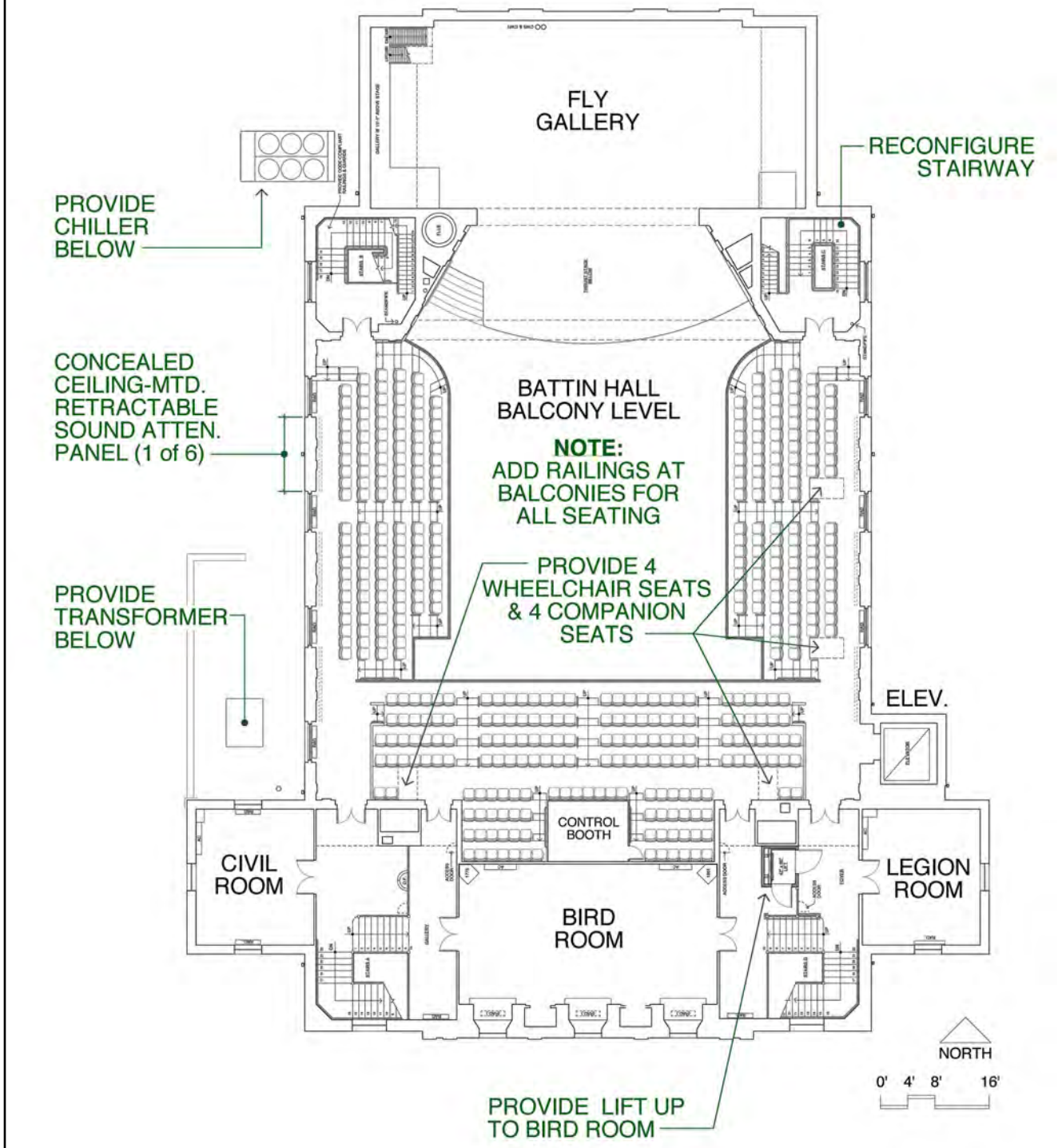
FIRST FLOOR PLAN - PROPOSED



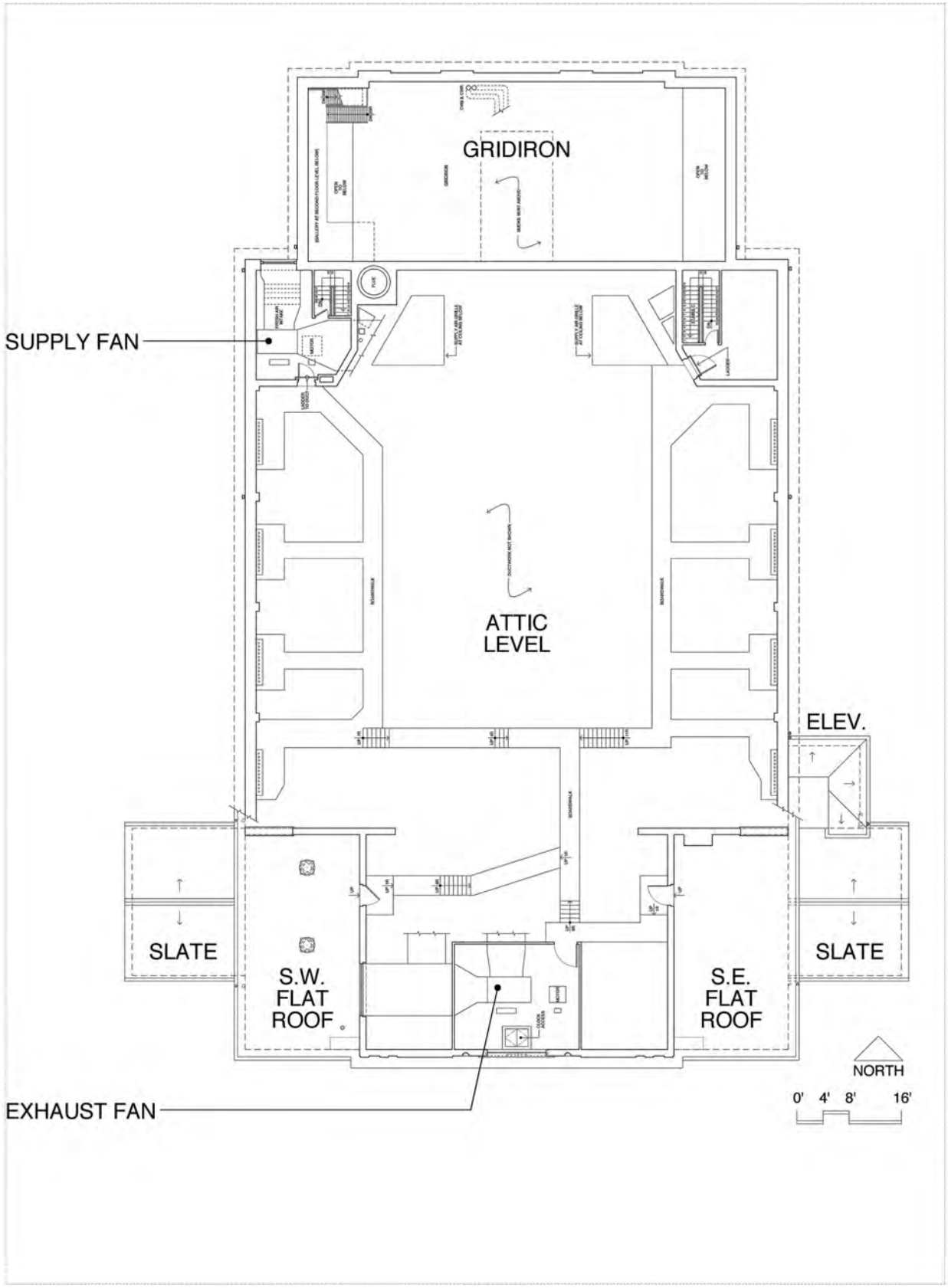
SECOND FLOOR PLAN - EXISTING



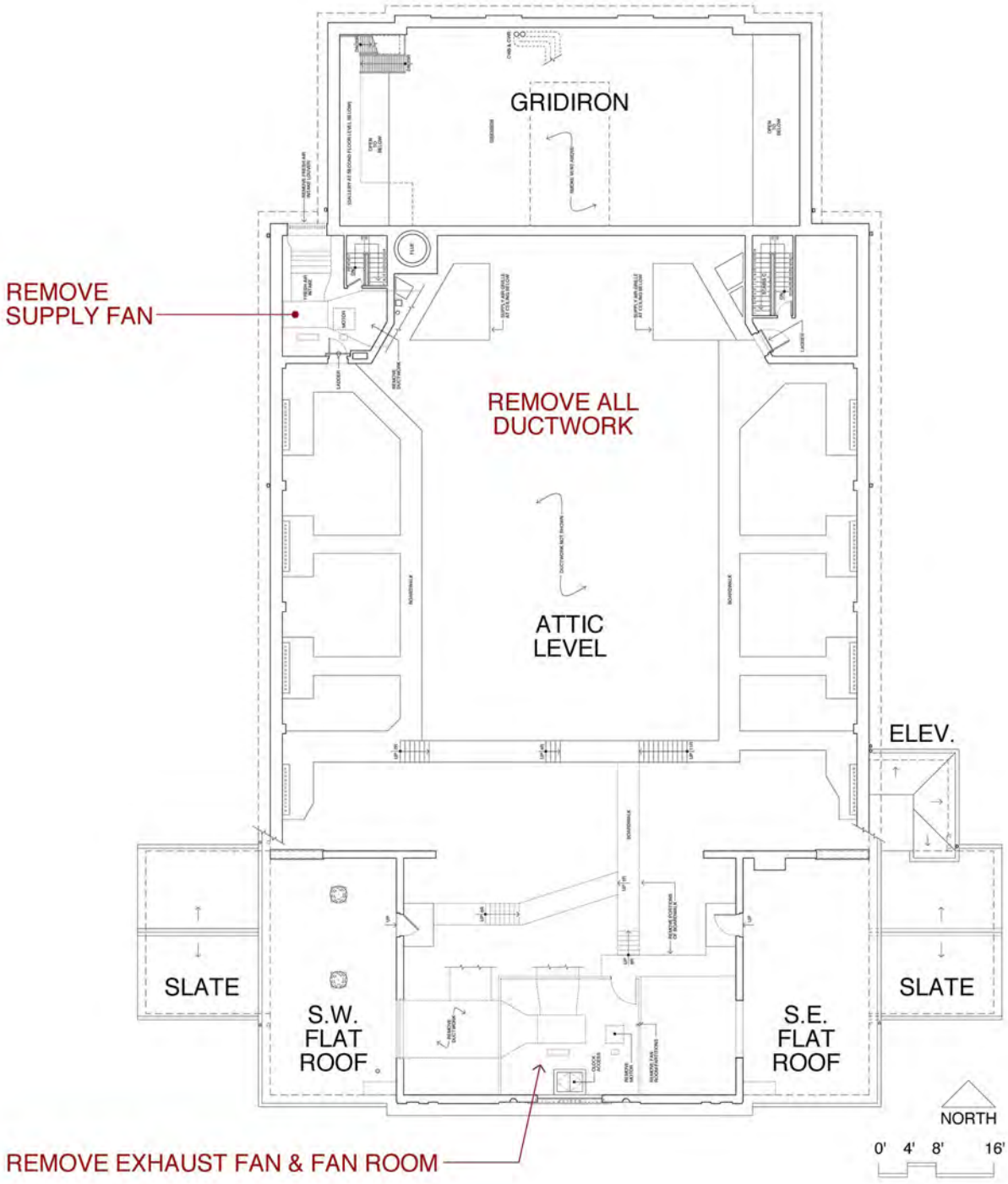
SECOND FLOOR PLAN - DEMOLITON



SECOND FLOOR PLAN - PROPOSED



ATTIC PLAN - EXISTING



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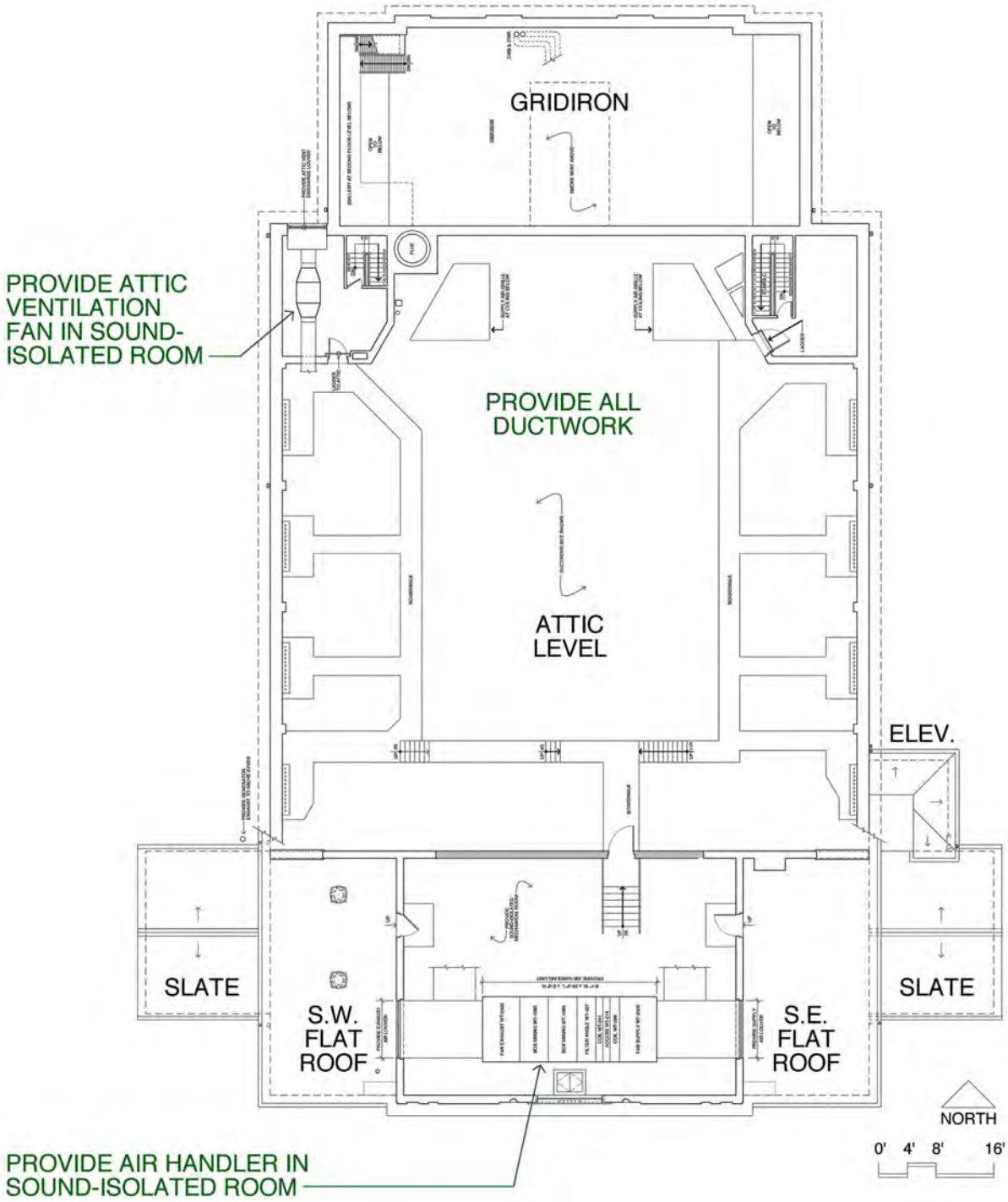

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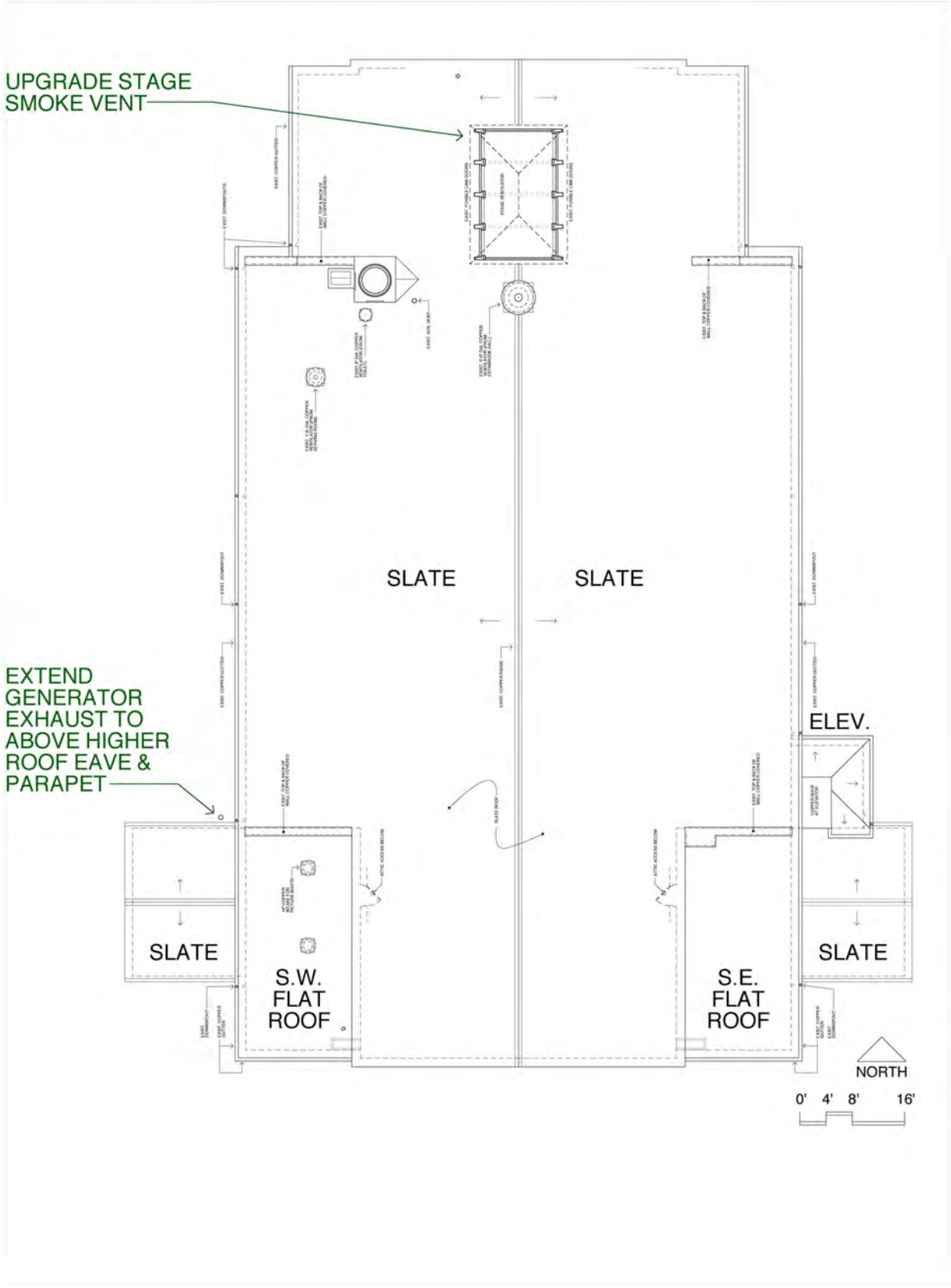

ROOF PLAN - PROPOSED

EXISTING STAGE AREA PRIOR TO SETUP FOR PUBLIC MEETING USE

PROPOSED STAGE AREA FOR PUBLIC MEETING USE: TOWN MEETING

EXISTING STAGE AREA PRIOR TO REMOVAL FOR EXHIBIT USE

PROPOSED STAGE AREA FOR EXHIBIT USE: QUILT SHOW

EXISTING STAGE AREA PRIOR TO SETUP FOR PERFORMANCE USE

PROPOSED STAGE AREA FOR PERFORMANCE USE: LEXINGTON SYMPHONY

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COMMITTEE SURVEY OF WORK SCOPE ITEMS FROM PRIOR STUDY

B-1 Accessibility Improvements
Auditorium & Support Spaces
B-2 Miscellaneous Improvements
Exterior Structural Repairs
Interior Structural Repairs
B-3 Structural Modifications
Electrical Improvements
B-4 Acoustical Improvements
Repairs & Improvements to Stage Rigging

WORK SCOPE ITEMS FROM PRIOR EVALUATION STUDY REPORT

B-5 Preliminary Scope & Budget
Accessibility Improvements
B-6 Auditorium & Support Spaces
Miscellaneous Improvements
B-7 Exterior Structural Repairs
Interior Structural Repairs
Structural Modifications
B-8 Mechanical – Fire Protection System Improvements
Mechanical – Plumbing System Improvements
Mechanical – HVAC System Improvements
Electrical Improvements
B-9 Acoustical Improvements
B-10 Repairs and Improvements to Stage Rigging

PRIORITIZATION NOTES

The Committee removed the following items from the work scope as a result of the survey scores and subsequent discussions regarding public benefit and need:

- Do Not Make Civil Room Accessible (anticipates a variance from 521 CMR)
- Do Not Provide TTY Pay Phone (delete public pay phone from Lobby)
- Do Not Restore c. 1928 Display Cabinets in Bird Room (keep existing)
- Do Not Replace Acoustical Shell at Main Stage (existing is adequate)
- Do Not Replace or Refurbish Fixed Seating (could be a separate project)
- Do Not Restore Operation of Stone Drinking Fountains (retain as-is)

AHCMBPC

Prioritization, 10 High Priority
5 Medium Priority
1 Low Priority

	ACCESSIBILITY IMPROVEMENTS	Comments	#	Ave										
1	Provide five accessible parking spaces and ..... a drop off area at the front entrance	What is req'd?	10	8.1	10	5	10	8	8	10	5	10	5	10
			9	8.9	10	5	10	10		10	5	10	10	10
2	Reconstruct and reconfigure the deteriorated entrance ramp and steep approach walk		10	9.4	10	10	10	10	8	10	8	10	10	8
3	Reconstruct brick sidewalks over bituminous concrete substrate (in lieu of stone dust		9	6.8	5	10	3	3	5		5	10	10	10
4	Provide wheelchair access up to Stage and down to a renovated Green Room below		10	9.8	10	10	10	10	10	10	10	10	10	8
5	Provide accessible seating in various locations within the Auditorium as indicated	Not in West Balcony	9	7.9	5	10	10	10	7		10	5	10	4
6	Provide handrails in the balcony seating tiers for improved access and increased safety		10	9.3	10	10	10	10	9	10	8	10	10	6
7	Improve speech clarity in the Auditorium for the hearing impaired	For everyone	10	10.0	10	10	10	10	10	10	10	10	10	10
8	Provide wheelchair access to the Bird Room.... and to the Civil Room		10	6.5	10	10	2	3	5	5	8	10	10	2
			10	5.1	1	10	2	3	7	5	1	10	10	2
9	Provide wheelchair access to the recital stage in Estabrook Hall		10	8.0	5	10	8	10	10	5	10	10	10	2
10	Provide railings at existing ramps in the east and west first floor corridors		10	9.3	10	10	8	10	10	10	10	5	10	10
11	Provide accessible door hardware and automatic operators where necessary		10	10.0	10	10	10	10	10	10	10	10	10	10
12	Provide accessible wall--mounted handrails and updated guardrails at back stairways		10	9.2	10	10	9	10	10	5	8	10	10	10
13	Replace existing public pay phone with a TTY pay phone in the same location		10	4.9	1	10	8	3	7	5	1	1	5	8
14	Renovate basement toilet rooms and incorporate accessible fixtures within each room	Retain unisex toilet	10	8.8	10	10	10	10	7	10	10	1	10	10

	AUDITORIUM & SUPPORT SPACES													
1	Replace the temporary stage extension with an integrated permanent thrust stage		9	8.4	10	10	7	9	9		8	5	10	8
2	Improve performance and house lighting for the audience and for the performers		10	8.9	10	10	6	9	8	10	8	10	10	8
3	Replace the freestanding acoustic shell with retractable acoustic shell in the fly gallery		10	5.1	1	10	5	7	5	5	1	5	10	2
4	Replace speaker system with line array speakers for enhanced speech intelligibility		10	9.7	10	10	9	10	8	10	10	10	10	10
5	Provide fully retractable sound--absorptive curtains at E/W windows and rear wall		10	7.9	10	10	8	9	7	10	1	10	10	4
6	Provide storm windows in Auditorium to reduce sound transmission from the exterior		10	7.6	10	10	8	8	6	10	5	10	5	4
7	Attenuate chiller noise with compressor wraps and attenuation stacks		10	8.5	10	10	8	9	8	5	5	10	10	10
8	Replace the existing air handling system with a sound--isolated air handling system		10	8.8	10	10	8	9	6	5	10	10	10	10
9	Replace the existing steam radiators with hydronic gravity convection heating units	What is the advantage?	10	9.0	10	10	8	9	5	10	8	10	10	10
10	Provide sound--isolated attic ventilation system for controlling temperature & humidity		10	9.1	10	10	8	9	8	10	8	10	10	8
11	Provide sound absorptive materials in the lobby ceiling and sound gaskets on the doors		10	9.0	10	10	10	8	8	10	8	10	10	6
12	Use the side corridors and side doors as vestibule entrances into the Auditorium		8	5.6		10	3		4	5	1	10	10	2
13	Restore, upgrade or replace Auditorium fixed seating		10	6.3	5	10	3	6	7	5	5	10	10	2
14	Improve audio--visual recording and simultaneous broadcast capabilities		10	8.4	10	10	10	8	6	5	5	10	10	10
15	Improve the fire curtain, rigging systems, gridiron and smoke venting of the Stage		10	8.8	10	10	5	9	9	10	5	10	10	10
16	Remove main electrical switchgear from the Stage and relocate to the Basement	Why?	8	7.8	10	10			6	10	10	5	5	6
17	Renovate former dressing room under east half of the stage as a Green Room area		10	7.1	10	10	4	8	5	5	8	5	10	6
18	Insulate and refinish interior surface of exterior walls and roof of the Stage		10	6.3	10	10	4	8	5	1	1	10	10	4
19	Refinish maple floors (Stage, Auditorium); repaint concrete floors (balcony, basement)		10	6.5	10	10	7	8	5	1	5	5	10	4

SURVEY RESULTS FOR WORK SCOPE PRIORITIZATION

AHCMBPC

Prioritization, 10 High Priority
5 Medium Priority
1 Low Priority

	MISCELLANEOUS IMPROVEMENTS																	
1	Orient Estabrook toward the stage and reconfigure south end to integrate storage	Enter via accessible room	8	5.5	5			8	5	5	5	5	5	6
2	Provide updated furniture, white boards and AV systems in each of 6 meeting rooms		9	6.8	10		4	8	4	5	5	5	10	10
3	Improve lighting and HVAC systems in the 6 meeting rooms and the 2 lobby areas		8	7.6	10		8	8	7		5	5	10	8
4	Replace carpet in 5 meeting rooms and repaint all 6 meeting rooms	Where existing is last done	7	6.6	10		3		5		5	5	10	8
5	Replace display cabinets in the Bird Room with type indicated in 1926 design drawings		9	3.7	5		2	0	3	1	8	5	5	4
6	Restore historic drinking fountains and provide accessible first floor drinking fountain		9	5.2	5		9	4	5	5	5	5	5	4
7	Provide temperature & humidity control in the original vault and adjacent storage area	Why needed?	7	6.9	5				5	5	3	10	10	10
8	Reconfigure west half of former dressing room for improved facility storage areas		8	6.3	10			8	5	1	5	5	10	6
9	Provide selective exterior repairs to deteriorated brickwork, lintels and flashing		8	8.4	10		9	8	7		10	10	5	8
10	Remove underground oil tank and provide interior oil tank for emergency generator		8	8.5	10			8	6	10	8	10	10	6
11	Remove loose fill fiberglass in attic floor and provide 10" of continuous mineral wool		7	7.1	10			8	5		3	10	10	4

	EXTERIOR STRUCTURAL REPAIRS																	
1	Replace rust--jacked lintels at 13 window/door openings. Flash lintels and reconstruct brickwork.	All due to deferred prior and same priority	8	9.0	10	10	8	8	6		10	10	10	
2	Rebuild and flash brickwork at water table on north elevation (exterior of stage area at north).		8	8.5	10	10	8	8	7		5	10	10	
3	At east and west walls above flat roof areas in southeast and southwest corners: reconstruct, flash and weep lower portions of brickwork. Remove rust and treat underlying steel beams. Cut and repoint interior of brickwork in these location to restore integrity of walls.		9	8.0	10	10	8	8	6	5	5	10	10	
4	Extend water table flashing at west wing brickwork. Rebuild or reset brickwork as needed.		8	9.1	10	10	8	8	7		10	10	10	
5	Replace rotted wood sill and flash underlying wall at boiler room "window" opening in west façade at bottom of metal exit stairs.		8	9.3	10	10	8	8	8		10	10	10	
6	Remove and reset granite plinths at each side of monumental entrance stairs. Provide waterproofing at substrate and reassemble with wept cavity. Rake joints in granite steps and provide backer rod and sealant.		9	8.2	10	10	9	8	7	5	5	10	10	
7	Remove existing ramp and reconfigure with new construction as indicated. Provide granite pavers and granite cladding over reinforced concrete. Provide pair of mill finish bronze rails each side.		9	8.7	10	10	10	10	5	10	8	5	10	
8	Repair brick screen wall at chiller and replace cap with flashed bluestone (2" thick, natural cleft)		9	6.9	10	10	8	8	5	1	5	5	10	

	INTERIOR STRUCTURAL REPAIRS																	
1	Repair cracked and settled basement concrete slab at west half of area below stage (facilities and building storage at former dressing area)	All due to deferred prior and same priority	8	8.8	10	10	9	8	8		5	10	10	
2	Assume interior repairs and waterproofing are required at east wall of Estabrook Hall. Repair finishes and wainscoting. (Note: Source of problems may be related to underground site drainage at east wall, possibly disrupted in 2000 by elevator addition made worse by tree root growth.)		8	8.6	10	10	9	8	7		5	10	10	
3	Repair rusted steel and cracked terrazzo at northern end of first riser along base of eastern basement stair outside of Estabrook Hall		8	8.8	10	10	10	8	7		5	10	10	
4	Repair cracks (presumably cosmetic) in Auditorium balcony--level concrete slabs and repaint concrete floors.		9	7.6	10	10	10	8	5	5	5	5	10	

SURVEY RESULTS FOR WORK SCOPE PRIORITIZATION

AHCMBPC

Prioritization, 10 High Priority
5 Medium Priority
1 Low Priority

STRUCTURAL MODIFICATIONS

1	Remove existing terrazzo and concrete floors in basement level toilet rooms. Provide replacement slabs and terrazzo for renovated toilet rooms.		9	7.1	10	10	9	8	4	5	3	5	10								
2	Provide painted concrete ramp at west and north sides of Estabrook Hall stage. Provide painted pair of steel handrails at each side of ramp.		9	7.3	5	10	9	10	4	5	8	10	5								
3	Remove upper floor levels at south end of Estabrook Hall. Extend Estabrook floor level to south wall. Provide concrete slab with terrazzo to match at room in exposed areas. Provide painted concrete slab in storage area. Provide painted decorative metal railings with moulded wood cap to match existing railings at ramp (and at gallery area to be removed).	Is the second ramp from page 9?	8	5.9	5	10	8		3	1	5	5	10								
4	Provide permanent thrust stage with maple flooring and wood paneled surround. Provide stairs at west side with wall mounted wood handrail. Provide readily removable and securely attached guardrails for all sides of stage so that it can be used for activities other than as a stage (e.g., additional floor space for annual quilt show).		8	8.6	10	10	8	10	4		6.5	10	10								
5	Provide framed openings, shallow pit (3") and hoistway walls for Auditorium to Stage to Green Room wheelchair lift. Vent hoistway (1 SF) with motorized damper normally closed to exterior via rated duct and louver. Damper opens in the event of temperature rise, fire alarm or power failure.		9	9.1	10	10	9	10	5	10	8	10	10								
6	Provide framed opening, shallow pit (3"), suspended framing and hoistway walls for Bird Room wheelchair lift. Vent hoistway (1 SF) with motorized damper normally closed to exterior via rated duct and louver. Damper opens in the event of temperature rise, fire alarm or power failure.		9	7.1	10	10	2	0	4	10	8	10	10								
7	Modify central balcony aisle stairs to adjust placement 4" toward south in order to provide clearance for wheelchair access at front cross aisle to Civil Room.		9	4.4	1	10	2	0	5	1	1	10	10								
8	Modify trusses and provide steel supports for HVAC equipment at south end of attic. Provide opening in east exterior wall for fresh air louver.		7	9.3	10	10			7	10	8	10	10								
9	Modify entrance drive, curbs, curb cuts and brick walkways at front entrance area to provide improved accessibility. Relocate or provide replacement bicycle rack adjacent to walkway.		9	7.8	10	10	10	10	5	5	5	5	10								

ELECTRICAL IMPROVEMENTS

1	Relocate existing switchboard from first floor stage area to basement electrical room. Relocate existing panel in basement to accommodate placement of switchgear. Re route all associated conduits and pull boxes.		9	8.6	10	10	9	9	6	10	8	5	10								
2	Relocate existing pad mounted transformer and re-route underground electrical from pole to pad to relocated switchgear. Repair pavement and exterior wall at present location of pad and wall-mounted conduits.		9	7.6	10	10	8	9	6	10	5	5	5								
3	Provide alternate price to replace switchboard and transformer instead of relocating existing equipment in order to minimize time required for power interruption.	Makes sense	8	6.9	10	10	10		8	10	1	1	5								
4	Rework the emergency transfer switch arrangement per the Electrical Engineer's recommendations.		8	8.0	10	10	10	9		5	5	10	5								
5	Replace and upgrade electrical panels and wiring in Estabrook Hall.		8	8.8	10	10		9	6	10	5	10	10								
6	Provide power as needed to upgrade HVAC equipment at described in Mechanical Engineer's system recommendations.		8	9.1	10	10		10	8	10	5	10	10								
7	Provide power, switching and fixtures to upgrade performance and house lighting as described in Lighting Consultant's recommendations.		8	9.3	10	10		9	7	10	8	10	10								
8	gridiron (inoperable lighting) as noted in Theater Consultant's conditions and recommendations.		8	8.4	10	10		9	8	10		10	10								

SURVEY RESULTS FOR WORK SCOPE PRIORITIZATION

AHCMBPC

Prioritization, 10 High Priority
5 Medium Priority
1 Low Priority

	ACOUSTICAL IMPROVEMENTS																	
1	Replace the existing, freestanding acoustical shell array at the stage with moveable towers and rigged canopy elements.		8	6.4	1	10			10	5	5	5	5	10				
2	Provide variable acoustic banners in concealed, soffited pockets at the south wall of the Auditorium on both floor levels. These will be located under the balcony at the first floor level and at the rearmost wall behind the back row of seating at each side of the projection booth.		9	9.0	10	10	8	10	5	10	8	10	10	10				
3	Provide interior, sound absorptive draperies set within the monumental arched windows jamb openings at the east and west walls of the Auditorium balcony level. Provide sealed interior fixed storm window panels to reduce noise transmission from outside.		9	7.3	10	10	5	10	5	10	1	10	5	10				
4	In the Entrance Lobby, provide stretched fabric over glass fiber at the central vaulted ceiling and at the three adjacent level ceiling areas		9	6.7	10	10	8	8	3	10	1	5	5	10				
5	Provide sound-absorptive, tackable, fabric-covered wall panels on thirty percent (30%) of wall surface areas of the meeting rooms: Estabrook, Robbins, Ellen Stone, Legion, Bird and Civil.	Accessible rooms only	9	6.6	10	10	5	10	3	5	1	10	5	10				
6	Provide architecturally integrated line array speaker system and related components for improving the clarity of voice amplification in the Auditorium.		9	9.4	10	10	9	10	6	10	10	10	10	10				
7	Upgrade audiovisual recording and broadcasting systems in the Auditorium. Replace four remotely controlled security cameras with higher-quality imaging for effective use in an improved environment with variable performance lighting conditions.	PEG Access Funds?	9	8.0	10	10	10	10	7	5	5	5	5	10				
8	Upgrade the HVAC system as noted in mechanical recommendations		8	9.8	10	10	9		9	10	10	10	10	10				
9	Provide sound gaskets at all doors into Auditorium and meeting rooms to reduce noise transmissions from lobbies and adjacent hallways.		9	8.9	10	10	8	10	7	10	5	10	10	10				
10	Consider re-directing Auditorium access to the east and west side doors via the corridors in order to benefit from the vestibule effect and to limit excessive noise transmission by restricting use of the Lobby-to-Auditorium doors.	Is this needed?	8	6.1	10	10	2		6	5	1	10	5					
11	Consider audiovisual equipment provisions in the meeting room for use with conducting business presentations.	Is this needed in all rooms?	7	7.3	5	10	10		6	5		5	10					
	REPAIRS AND IMPROVEMENTS TO STAGE RIGGING																	
1	Remove empty pipe battens and associated chains. Remove unused sheaves from gridiron.		8	9.3	10	10		9	10	10	5	10	10					
2	Provide six motorized line sets rigged from gridiron for three additional sets of lighting and three sets of suspended acoustical shells.		8	8.3	10	10		9	7	5	5	10	10					
3	Repair operation of fire curtain by replacing bronze guides, re-terminating release line, and replacing nylon sheaves with metal. Remove electrical junction box from stage right smoke pocket at floor level due to its obstruction of fire curtain closure.		8	9.0	10	10		9	8	10	5	10	10					
4	Remove abandoned counterweight rigging system on sidewall of fly gallery.		8	8.0	10	10		9	10	5	5	5	10					
5	Replace smoke hatch rigging with upgraded winches with thermal links, test levers and lockable covers. Provide weatherization of cupola with rigid insulation and interior finish. Provide weather stripping at smoke hatch doors.		8	9.0	10	10		9	8	10	5	10	10					
6	Provide cable-mounted pendant operator for front-of-house lighting to allow for safe operation.		7	8.4	10	10		9	5		5	10	10					

SURVEY RESULTS FOR WORK SCOPE PRIORITIZATION

materials used, including the exhaust piping, brackets and associated fasteners, should be color galvanized or powder coated stainless steel to limit the possibility of future rusting so that the brick façade will not be damaged.

PRELIMINARY SCOPE & BUDGET

PRELIMINARY SCOPE

A preliminary project scope has been developed based on user comments, town needs and existing conditions of the facility. This project scope is referred to as being "preliminary" because of the limits of this design study and the possibility that some project components may vary in scope between when the study is published and the time comes to implement these recommendations. Each of the assumptions and observed conditions in this report should be reviewed and confirmed as part of the subsequent schematic design, design development and construction documentation process in anticipation of project implementation.

The project scope is verbally described below in several categories of work. Illustrations of the proposed floor plan modifications that accompany these preliminary scope recommendations are detailed in Appendix A where the existing floor plans are shown followed by demolition drawings and preliminary plans indicating the proposed alterations. Each of the floor plans (basement, first, second, attic, roof) and the site plan should be consulted while reviewing the recommended project scope as noted.

The categories of work organize the various components of recommended improvements to the facility into the following related elements:

- Accessibility Improvements
- Auditorium & Support Spaces
- Miscellaneous Improvements
- Exterior Structural Repairs
- Interior Structural Repairs
- Structural Modifications
- Mechanical – Fire Protection System Improvements
- Mechanical – Plumbing System Improvements
- Mechanical – HVAC System Improvements
- Electrical Improvements
- Acoustical Improvements
- Repairs and Improvements to Stage Rigging

ACCESSIBILITY IMPROVEMENTS

1. Provide five accessible parking spaces and a drop off area at the front entrance.

RECOMMENDED WORK SCOPE FROM EVALUATION STUDY

2. Reconstruct and reconfigure the deteriorated entrance ramp and steep approach walk.
3. Reconstruct brick sidewalks over bituminous concrete substrate (in lieu of stone dust).
4. Provide wheelchair access up to Stage and down to a renovated Green Room below.
5. Provide accessible seating in various locations within the Auditorium as indicated.
6. Provide handrails in the balcony seating tiers for improved access and increased safety.
7. Improve speech clarity in the Auditorium for the hearing impaired.
8. Provide wheelchair access to the Bird Room and the Civil Room.
9. Provide wheelchair access to the recital stage in Estabrook Hall.
10. Provide railings at existing ramps in the east and west first floor corridors.
11. Provide accessible door hardware and automatic operators where necessary.
12. Provide accessible wall-mounted handrails and updated guardrails at back stairways.
13. Replace existing public pay phone with a TTY pay phone in the same location.
14. Renovate basement toilet rooms and incorporate accessible fixtures within each room.

AUDITORIUM & SUPPORT SPACES

1. Replace the temporary stage extension with an integrated permanent thrust stage.
2. Improve performance and house lighting for the audience and for the performers.
3. Replace the freestanding acoustic shell with retractable acoustic shell in the fly gallery.
4. Replace speaker system with line array speakers for enhanced speech intelligibility.
5. Provide fully retractable sound-absorptive curtains at E/W windows and rear wall.
6. Provide storm windows in Auditorium to reduce sound transmission from the exterior.
7. Attenuate chiller noise with compressor wraps and attenuation stacks.
8. Replace the existing air handling system with a sound-isolated air handling system.
9. Replace the existing steam radiators with hydronic gravity convection heating units.
10. Improve ventilation distribution system to the central balcony and under the balcony.
11. Provide sound-isolated attic ventilation system for controlling temperature & humidity.
12. Provide sound absorptive materials in the lobby ceiling and sound gaskets on the doors.
13. Use the side corridors and side doors as vestibule entrances into the Auditorium.
14. Restore, upgrade or replace Auditorium fixed seating.
15. Improve audio-visual recording and simultaneous broadcast capabilities.
16. Improve the fire curtain, rigging systems, gridiron and smoke venting of the Stage.
17. Remove main electrical switchgear from the Stage and relocate to the Basement.
18. Renovate former dressing room under east half of the stage as a Green Room area.
19. Insulate and refinish interior surface of exterior walls and roof of the Stage.
20. Refinish maple floors (Stage, Auditorium); repaint concrete floors (balcony, basement).

MISCELLANEOUS IMPROVEMENTS

1. Orient Estabrook toward the stage and reconfigure south end to integrate storage.
2. Provide updated furniture, white boards and AV systems in each of 6 meeting rooms.
3. Improve lighting and HVAC systems in the 6 meeting rooms and the 2 lobby areas.
4. Replace carpet in 5 meeting rooms and repaint all 6 meeting rooms.
5. Replace display cabinets in the Bird Room with type indicated in 1926 design drawings.
6. Restore historic drinking fountains and provide accessible first floor drinking fountain.
7. Provide temperature & humidity control in the original vault and adjacent storage area.
8. Reconfigure west half of former dressing room for improved facility storage areas.
9. Provide selective exterior repairs to deteriorated brickwork, lintels and flashing.
10. Remove underground oil tank and provide interior oil tank for emergency generator.
11. Remove loose fill fiberglass in attic floor and provide 10" of continuous mineral wool.

RECOMMENDED WORK SCOPE FROM EVALUATION STUDY

EXTERIOR STRUCTURAL REPAIRS

1. Replace rust-jacked lintels at 13 window/door openings. Flash lintels and reconstruct brickwork.
2. Rebuild and flash brickwork at water table on north elevation (exterior of stage area at north).
3. At east and west walls above flat roof areas in southeast and southwest corners: reconstruct, flash and weep lower portions of brickwork. Remove rust and treat underlying steel beams. Cut and repoint interior of brickwork in these location to restore integrity of walls.
4. Extend water table flashing at west wing brickwork. Rebuild or reset brickwork as needed.
5. Replace rotted wood sill and flash underlying wall at boiler room "window" opening in west façade at bottom of metal exit stairs.
6. Remove and reset granite plinths at each side of monumental entrance stairs. Provide waterproofing at substrate and reassemble with wept cavity. Rake joints in granite steps and provide backer rod and sealant.
7. Remove existing ramp and reconfigure with new construction as indicated. Provide granite pavers and granite cladding over reinforced concrete. Provide pair of mill finish bronze rails each side.
8. Repair brick screen wall at chiller and replace cap with flashed bluestone (2" thick, natural cleft).
9. Refer to the Structural Engineer's Report in Appendix D for further information.

INTERIOR STRUCTURAL REPAIRS

1. Repair cracked and settled basement concrete slab at west half of area below stage (facilities and building storage at former dressing area).
2. Assume interior repairs and waterproofing are required at east wall of Estabrook Hall. Repair finishes and wainscoting. (Note: Source of problems may be related to underground site drainage at east wall, possibly disrupted in 2000 by elevator addition made worse by tree root growth.)
3. Repair rusted steel and cracked terrazzo at northern end of first riser along base of eastern basement stair outside of Estabrook Hall.
4. Repair cracks (presumably cosmetic) in Auditorium balcony-level concrete slabs and repaint concrete floors.
5. Refer to the Structural Engineer's Report in Appendix D for further information.

STRUCTURAL MODIFICATIONS

1. Remove existing terrazzo and concrete floors in basement-level toilet rooms. Provide replacement slabs and terrazzo for renovated toilet rooms.
2. Provide painted concrete ramp at west and north sides of Estabrook Hall stage. Provide painted pair of steel handrails at each side of ramp.

RECOMMENDED WORK SCOPE FROM EVALUATION STUDY

3. Remove upper floor levels at south end of Estabrook Hall. Extend Estabrook floor level to south wall. Provide concrete slab with terrazzo to match at room in exposed areas. Provide painted concrete slab in storage area. Provide painted decorative metal railings with moulded wood cap to match existing railings at ramp (and at gallery area to be removed).
4. Provide permanent thrust stage with maple flooring and wood-paneled surround. Provide stairs at west side with wall-mounted wood handrail. Provide readily removable and securely attached guardrails for all sides of stage so that it can be used for activities other than as a stage (e.g., additional floor space for annual quilt show).
5. Provide framed openings, shallow pit (3") and hoistway walls for Auditorium-to-Stage-to-Green Room wheelchair lift. Vent hoistway (1 SF) with motorized damper normally closed to exterior via rated duct and louver. Damper opens in the event of temperature rise, fire alarm or power failure.
6. Provide framed opening, shallow pit (3"), suspended framing and hoistway walls for Bird Room wheelchair lift. Vent hoistway (1 SF) with motorized damper normally closed to exterior via rated duct and louver. Damper opens in the event of temperature rise, fire alarm or power failure.
7. Modify central balcony aisle stairs to adjust placement 4" toward south in order to provide clearance for wheelchair access at front cross aisle to Civil Room.
8. Modify trusses and provide steel supports for HVAC equipment at south end of attic. Provide opening in east exterior wall for fresh air louver.
9. Modify entrance drive, curbs, curb cuts and brick walkways at front entrance area to provide improved accessibility. Relocate or provide replacement bicycle rack adjacent to walkway.
10. Refer to the Structural Engineer's Report in Appendix D for further information.

MECHANICAL – FIRE PROTECTION SYSTEM IMPROVEMENTS

1. See recommendations on page 4 of Fire Protection Systems in Mechanical Engineer's Report in Appendix D.

MECHANICAL – PLUMBING SYSTEM IMPROVEMENTS

1. See recommendations on page 3 of Plumbing Systems in Mechanical Engineer's Report in Appendix D.

MECHANICAL – HVAC SYSTEM IMPROVEMENTS

1. See recommendations on pages 6-9 of HVAC Systems in Mechanical Engineer's Report in Appendix D.

ELECTRICAL IMPROVEMENTS

1. Relocate existing switchboard from first floor stage area to basement electrical room. Relocate existing panel in basement to accommodate placement of switchgear. Re-route all associated conduits and pull boxes.

RECOMMENDED WORK SCOPE FROM EVALUATION STUDY

2. Relocate existing pad-mounted transformer and re-route underground electrical from pole to pad to relocated switchgear. Repair pavement and exterior wall at present location of pad and wall-mounted conduits.
3. Provide alternate price to replace switchboard and transformer instead of relocating existing equipment in order to minimize time required for power interruption.
4. Rework the emergency transfer switch arrangement per the Electrical Engineer's recommendations.
5. Replace and upgrade electrical panels and wiring in Estabrook Hall.
6. Provide power as needed to upgrade HVAC equipment at described in Mechanical Engineer's system recommendations.
7. Provide power, switching and fixtures to upgrade performance and house lighting as described in Lighting Consultant's recommendations.
8. Make corrections as needed at the fire curtain pocket (junction box blockage) and gridiron (inoperable lighting) as noted in Theater Consultant's conditions and recommendations.
9. Refer to the Electrical Engineer's Report in Appendix D for further information.

ACOUSTICAL IMPROVEMENTS

1. Replace the existing, freestanding acoustical shell array at the stage with moveable towers and rigged canopy elements.
2. Provide variable acoustic banners in concealed, soffited pockets at the south wall of the Auditorium on both floor levels. These will be located under the balcony at the first floor level and at the rearmost wall behind the back row of seating at each side of the projection booth.
3. Provide interior, sound-absorptive draperies set within the monumental arched windows jamb openings at the east and west walls of the Auditorium balcony level. Provide sealed interior fixed storm window panels to reduce noise transmission from outside.
4. In the Entrance Lobby, provide stretched fabric over glass fiber at the central vaulted ceiling and at the three adjacent level ceiling areas.
5. Provide sound-absorptive, tackable, fabric-covered wall panels on thirty percent (30%) of wall surface areas of the meeting rooms: Estabrook, Robbins, Ellen Stone, Legion, Bird and Civil.
6. Provide architecturally integrated line array speaker system and related components for improving the clarity of voice amplification in the Auditorium.
7. Upgrade audiovisual recording and broadcasting systems in the Auditorium. Replace four remotely controlled security cameras with higher-quality imaging for effective use in an improved environment with variable performance lighting conditions.
8. Upgrade the HVAC system as noted in mechanical recommendations.
9. Provide sound gaskets at all doors into Auditorium and meeting rooms to reduce noise transmissions from lobbies and adjacent hallways.

RECOMMENDED WORK SCOPE FROM EVALUATION STUDY

10. Consider re-directing Auditorium access to the east and west side doors via the corridors in order to benefit from the vestibule effect and to limit excessive noise transmission by restricting use of the Lobby-to-Auditorium doors.
11. Consider audiovisual equipment provisions in the meeting room for use with conducting business presentations.
12. Refer to the Acoustical Consultant's Report in Appendix D for further information.

REPAIRS AND IMPROVEMENTS TO STAGE RIGGING

1. Remove empty pipe battens and associated chains. Remove unused sheaves from gridiron.
2. Provide six motorized line sets rigged from gridiron for three additional sets of lighting and three sets of suspended acoustical shells.
3. Repair operation of fire curtain by replacing bronze guides, re-terminating release line, and replacing nylon sheaves with metal. Remove electrical junction box from stage right smoke pocket at floor level due to its obstruction of fire curtain closure.
4. Remove abandoned counterweight rigging system on sidewall of fly gallery.
5. Replace smoke hatch rigging with upgraded winches with thermal links, test levers and lockable covers. Provide weatherization of cupola with rigid insulation and interior finish. Provide weather stripping at smoke hatch doors.
6. Provide cable-mounted pendant operator for front-of-house lighting to allow for safe operation.
7. Refer to the Theater Consultant's report in Appendix D for further information.

PRELIMINARY BUDGET

A preliminary budget of approximately $7.75 million, in current dollars, has been established to reflect the order of magnitude of recommended improvements to the facility and related costs. This budget assumes that the work will be procured as a single project utilizing a standard public construction bidding process in accordance with the Massachusetts General Laws Chapter 149. The Town of Lexington will provide an Owner's Project Manager (OPM) from within their own staff, thereby eliminating the expense of retaining an OPM as a professional consultant. The preliminary budget will need to be reviewed again in the future based upon a final project scope and the overall cost will need to be escalated when the schedule for project implementation has been determined. A summary of the preliminary project costs is as follows:

$6,036,916	Conceptual Construction Cost
$1,704,783	Related Project Costs & Allowances
$7,741,698	Preliminary Project Budget for Single Project

A comprehensive summary of the cost components that comprise this preliminary budget is provided on the following page. Refer also to Appendix E for a detailed breakdown of costs that were used in establishing the various construction values.

Isaac Harris Cary Memorial Building Renovation
1605 Massachusetts Avenue
Lexington, Massachusetts

Contract No. 13-06

EVALUATION OF EXISTING ROOF TRUSSES

C-1 Letter from Structures North Consulting Engineers
Confirming Adequacy of Existing Steel Roof Trusses

EVALUATION OF CHILLER NOISE

C-2 Letter from Acentech: Proposed Replacement Chiller Location & Noise Issues

ENERGY ANALYSIS FOR REPLACEMENT BOILERS & CHILLER

C-5 Energy Analysis Memo from The Green Engineer regarding
$12,800 Annual Operating Cost Savings from HVAC Upgrades

AUDIOVISUAL SYSTEM PROGRAM REPORT

C-8 Audiovisual System Program & Budget Report by Acentech

The AV System Program Report was the result of discussions with interested parties relative to the various audiovisual needs and opportunities. After completion of the report, discussion with the Committee resulted in the following decisions regarding the recommended project scope:

A.	Auditorium Base Audiovisual System	YES
A.1	Left/Right Loudspeakers	no
A.2	Production Communication/Intercom	YES
A.3	Additional Wireless Microphones	no
A.4	Portable Loudspeakers	YES
A.5	Motorized Projection Screen	no
A.6	Broadcast Video Production System	YES
A.7	Lobby Audio (as amended)	YES
A.8	Lobby Video Display	no
A.9	Green Room Video and Audio Monitoring	YES
B.	Small Meeting Rooms (Ellen Stone & Legion, not Civil)	YES
C.	Estabrook Hall	YES
D.	Bird Room	YES
E.1	Portable Camera Ports in Mtg. Rooms (no motorized cameras)	YES
E.2	Video Distribution to Meeting Room Displays	no

AURALIZATION OF BATTIN HALL

C-33 Image from Acentech: Auralization Analysis (3-D Computer Model)

Structures North

60 Washington St, Suite 401
Salem, Massachusetts 01970-3517
P.O. Box 01971-8560
T 978.745.6817 | F 978.745.6067
www.structures-north.com

10 September 2012

Mills Whitaker Architects, LLC
PO Box 750089
Arlington, MA 02475

Attention: Don Mills

Reference: Cary Memorial Building
Lexington, MA

Dear Don,

On Monday, 30 July 2012, I visited the Cary Memorial Building in Lexington to perform an investigation and load capacity evaluation of the roof trusses above the auditorium.

According to the 2009 International Building Code which is in effect here in the Commonwealth, the anticipated base plus sliding snow load on the roof should not exceed 40 psf. Our observations and subsequent calculations indicate that the existing roof members and riveted connections have sufficient capacity to support this load along with the self-weight of the structure.

Respectfully Yours,

Elaine E Shapiro

Elaine E. Shapiro, E.I.T.
Structures North Consulting Engineers, Inc.

ROOF TRUSS EVALUATION LETTER

Acentech Incorporated
33 Moulton Street
Cambridge, MA 02138

Telephone: 617-499-8000
Facsimile: 617-499-8074
E-mail: rsu@acentech.com

Acentech

October 31, 2012

Don Mills
P.O. Box 750089
Arlington, MA 02475

Subject: Cary Memorial Hall – Chiller Noise Evaluation
Lexington, MA
Acentech Project No. 622466

Dear Don:

We have reviewed the proposed air-cooled chiller that your mechanical engineer provided us. We understand that the plan is to replace the existing 200-ton screw chiller with a smaller 120-ton scroll chiller. In addition, you would like our evaluation on the pros and cons of installing the new chiller in a new location that is farther from the windows of the Cary Memorial Hall.

Our finding is that the new chiller will result in lower noise level impact into the main hall, even if it is located at the same location as the existing screw chiller. Installing the new chiller in the new location farther from the windows will reduce the chiller noise significantly, where window upgrades will be unnecessary. To minimize the noise intrusion, we are recommending that the available Comprehensive Acoustical Package be included with the new chiller.

We also want to point out that installing the chiller at the new location will reduce the distance significantly between the chiller and the closest neighboring property. The Comprehensive Acoustic Package that we recommend will also address this concern.

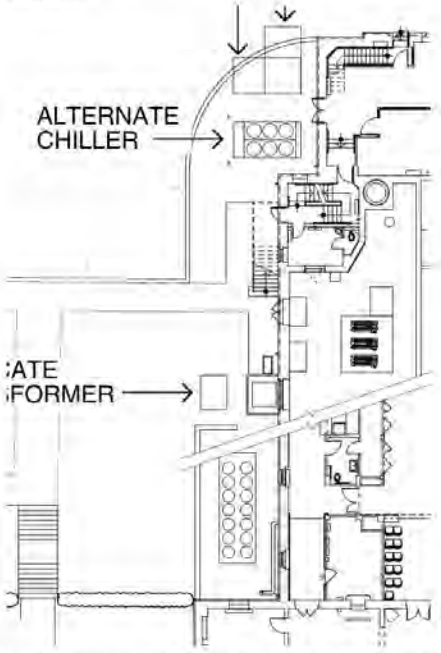
Evaluation of Chiller Noise to the Interior

Based on available sound data of a 200-ton screw compressor chiller, we were able to compare sound emissions from the existing chiller to the proposed new CGAM scroll chiller. There are four different chiller sound levels offered by Trane for the CGAM chiller:

1. Compact
2. Super Quiet
3. Super Quiet with Night Noise Setback
4. Comprehensive Acoustic Package

If the new chiller is installed at the same location as the existing chiller, chiller noise emissions will decrease by at least 5 dB even with the Compact option. With the Comprehensive Acoustic Package, the reductions could be as much as 13 dB.

If the new chiller is installed at the new proposed location (indicated as "Alternate Chiller" in the figure below), chiller noise emissions to the interior will decrease by at least 15 dB. We estimate that with the existing glazing, interior chiller noise levels will be about 30 to 35 dBA with the "Compact" option, and 20 to 25 dBA with the Comprehensive Acoustic Package. The latter, more stringent background noise level is consistent with the background noise goals of the proposed renovation. Based on this, it is not necessary to move the proposed chiller further back to the other alternate locations if the Comprehensive Acoustic Package is selected, although the edge of the building will certainly provide some barrier shielding and further reduce noise emissions to the closest windows.



Keep in mind that the manufacturer's sound data is limited at the lower frequency bands, such as the chiller compressor noise. This uncertainty regarding low-frequency noise emissions is further justification for selecting one of the manufacturer's noise-reduction packages.

Acentech

Evaluation of Chiller Noise to the Exterior

We also review the potential impact of the chiller to the residences behind Cary Memorial Hall. The closest neighbor to the existing chiller is approximately 130 ft. The new proposed location, noted as "Alternate Chiller" in the figure in the previous page, is about 70 ft. from the neighbor. This is a significant change in distance and will affect the chiller noise emissions to the neighbors.

With the standard Compact option from Trane, the new chiller at the new proposed location will emit the same noise level as the existing chiller at the existing location would were there **no barrier.** In other words, the Compact option will be **noisier** at the property line than before.

To achieve similar noise emissions levels as the existing condition, it will be necessary to select the Trane scroll chiller with the Comprehensive Acoustic Package (option 4 on the first page). Alternately, a new noise barrier could be provided around the new Compact chiller, although such a barrier would not provide the noise reduction to the interior that we recommend for this project.

There is no sound data available for option 3 where the Super Quiet chiller has a Night Noise Setback option. This may also be a viable solution, which we can review if additional information about this option becomes available.

* * * * *

I trust this letter provides the information that you need at this time. If you have questions, please call me on my direct line at 617.499.8080.

Sincerely,
ACENTECH INCORPORATED

Rose Mary Su
Senior Consultant

cc: Ben Markham – Acentech, Inc.

J:\622xxx\622466\622466 - Mills Whitaker - Cary Memorial\A\Program and analization\Mech Sys\MWA-Cary Chiller Noise Evaluation_Acentech.docx

Acentech

The Green Engineer, LLP

Sustainable Design Consulting

Memorandum

To: **Don Mills**
From: **Christopher Schaffner, PE, LEED Fellow**
Date: **December 28, 2012**
Re: **Energy Analysis**
Project: **Cary Building, Lexington, MA**

Executive Summary

Replacement of the existing boilers and chillers is proposed. The boiler replacement is estimated to save about $7500 per year. The chiller replacement is estimated to save about $5300 per year.

Introduction

At your request, we have performed conceptual energy consumption estimates for various options under consideration for the Cary Building, in Lexington MA. Your office has undertaken a comprehensive study of renovation and improvement options for this building. Our work also builds on the work performed by Forte Engineering, the MEP engineer for the project.

We have looked at both the heating and cooling systems.

It is important to keep in mind the limitations of energy analysis when reviewing this information. Energy consumption is highly dependent on weather conditions and the actual operating schedule of the building. The numbers generated will not necessarily be an accurate projection of actual energy costs, but should serve as an accurate comparison between alternatives.

Assumptions

A few basic assumptions are made for both analyses, as follows:

1) Hours of operation and types of use will be similar to current use.
2) Any improvements to the building envelope not included.
3) Additional ventilation may be added as part of the building renovations. However it is assumed that any ventilation will offset current infiltration, and that no change in energy consumption will result.
4) While control upgrades are proposed, the analysis assumes these improvements are independent of the equipment selections. No additional credit
5) Utility prices used in the analysis are based on current rates, at $0.15/kWh for electricity and $1.10/therm for natural gas. Utility prices are of course subject to market conditions and will change over time.

50 Beharrell St Concord, MA 01742 P: 978 369 8978

OPERATING COST ANALYSIS FOR HVAC SYSTEM UPGRADES

Boilers, Heating System

Baseline –
According to the report by Forte Engineering the existing heating system consists of two boilers, the newer being 80 HP - dual fuel fired (gas and no.2 oil), and the older being 60 hp – oil fired. The boilers supply all steam requirements for Cary Hall and all hot water heating, via a converter in the boiler room, to the Town Hall. The system typically runs all winter with only one boiler operating on natural gas fuel. In Cary Hall a combination of automatic and manual valves control heating flow to radiators and the air handling unit.

We assume the existing boilers to be about 78% efficient.

Proposed –
The propose upgrade is a replacement of the existing boilers with three new gas-fired boilers, Hydrotherm KN-20 (or similar) with a thermal efficiency of 92%. Additionally, radiators are to be replaced with fan coils units at many locations in Cary Hall.

Analysis -
Peak Load – 2000 MBH
Assume – 2000 Full Load Hours
Baseline Efficiency – 78%
Proposed Efficiency – 92%
Fan Coil fan HP – 5 HP total

Results-

	Boiler Eff.	Fan Coil HP	kWh/yr	Therm/yr	$/yr	Savings
Base	78%	0	0	51,455	$56,601	
Proposed	92%	5	7500	43,625	$49,113	$7,488

Note that the fan coils use about $1200/yr in electricity. The boiler replacement alone saves about $8600.

Chillers, Cooling System

Baseline -
Existing Chiller 200 ton chiller installed 10+ years ago, operates at only 120 tons load. Based on energy codes in place at the time, the efficiency of the existing chiller is estimated to be EER=8.3

Proposed-
The chiller is to be replaced with a new 120 Ton capacity chiller, similar to Trane CGAM, air cooled scroll type chiller. Estimated efficiency of EER=10.3 based on manufacturer's data.

Analysis-
Peak load = 120 Tons
Full Load Hours = 1200 hours
Baseline EER=8.3
Proposed EER=10.3

Results-

	EER	kWh/yr	$/yr	Savings
Base	8.5	203,294	$30,494	
Proposed	10.3	167,767	$25,165	$5,329

Acentech

CARY MEMORIAL HALL

FINAL AUDIOVISUAL SYSTEM PROGRAM REPORT

Acentech Job No. 622466
October 17, 2012
Revised December 5, 2012

Prepared for:
Mills Whitaker Architects

Prepared by:
Acentech Incorporated
33 Moulton Street
Cambridge, MA 02138
617-499-8000

AUDIOVISUAL SYSTEM PROGRAM REPORT

TABLE OF CONTENTS

GENERAL SUMMARY

1.0 GENERAL:

This program report describes the audiovisual systems in for the Cary Memorial Hall, defines the audiovisual system technologies utilized for the different spaces, and presents a budget for the systems. The program report also provides general costs for audiovisual system components and installation. The client should review this document for conformity to user needs. It must also be compiled with other related budgets such as network data distribution, furniture, millwork, electrical, and mechanical systems to provide a complete picture of the associated costs.

1.1 ACENTECH'S BACKGROUND

Acentech is an independent consulting firm specializing in the design of advanced sound, audiovisual and videoconferencing systems. In order to provide unbiased consulting and design services, Acentech does not sell or install equipment and does not represent any dealer, distributor, or manufacturer.

1.2 INFORMATION GATHERING:

This report is based upon our telephone discussion and meetings with Mills Whitaker Architects and the Owner, review of the drawings, our experience on similar projects, and industry standards reflecting generally accepted design criteria. The design team and owner will review this draft report and provide comments, after which we will modify the report and it will become the basis of design for the audiovisual systems. This report is intended to be used as a starting point for discussions related to the specific needs of Cary Memorial Hall.

1.3 DEFINING ADD-ALTERNATES:

At this early stage of the project it is important to capture all requested requirements for the various rooms in Cary Memorial Hall. At this time we have identified possible Add-Alternates. As the project moves forward we will update audiovisual system cost, along with any changes in needed capability. Cary Memorial Hall will need to determine their priorities in setting the Add-Alternate schedule for final purchase. If Acentech is chosen to move forward with the design of the audiovisual system contract documents, we expect that the complete system design will include the selected and optional Add-Alternates. We will integrate into our design as much of the Owner's furnished equipment as reasonably possible as "Owner Furnished Equipment" (OFE).

BUDGET SUMMARY

2.0 COST ESTIMATE SUMMARY:

A.	**Auditorium Base Audiovisual System:**		**$167,300**
	1. Add-Alt 1, Left/Right Loudspeakers:	*$17,400*	
	2. Add-Alt 2, Production Communication/Intercom:	*$8,200*	
	3. Add-Alt 3, Additional Wireless Microphones:	*$36,700*	
	4. Add-Alt 4, Portable Loudspeakers:	*$3,700*	
	5. Add-Alt 5, Motorized Projection Screen:	*$80,200**	
	6. Add-Alt 6, Broadcast Video Production System:	*$83,900*	
	7. Add-Alt 7, Lobby Audio:	*$5,000*	
	8. Add-Alt 8, Lobby Video Displays:	*$37,800**	
	9. Add-Alt 9, Green Room Video and Audio Monitoring:	*$6,900*	
B.	**Small Meeting Rooms ($8,100 per room x 3):**		**$24,300**
C.	**Estabrook Hall:**		**$49,000**
D.	**Bird Room:**		**$40,800**
E.	**Meeting Room Add-Alternates:**		
	1. Add-Alt 1, Motorized Video Camera:	*$14,000*	
	2. Add-Alt 2, Video Distribution to Meeting Room Displays:	*$33,800*	

**Additional pricing has been provided for these options. See description for further details.*

2.1 BUDGET NOTES:

A. The installed cost of the audiovisual system is approximate, assumes the use of new equipment installed professionally by a qualified audiovisual system contractor, is provided with as-built documentation, and includes a one-year warranty covering parts and labor.

B. The estimates assume that the labor costs are 40% greater than the total of equipment list prices. This figure accounts for equipment normally sold at some discount from list price and incorporates the costs associated with travel, installation, documentation, training and on-site maintenance for one year. Installation cost is typically the greatest variable and is heavily dependent on factors such as site conditions, divisions of work between audiovisual system and other contractors, local market conditions and requirements for union labor.

C. The estimates do not include costs for requirements such as electrical power, conduit, lighting fixtures, casework or any special architectural requirements. Technical administration and staffing, as well as vendor-supplied service and maintenance beyond the initial one-year parts and installation warranty, are also not included in this estimate.

D. The pricing represents the major divisions of equipment types required to meet the audiovisual system requirements identified at this time. The equipment lists have been prepared for budgeting purposes only and reflect a general level of systems design. The presence or absence any items should not be assumed definitive.

E. The estimate includes installation and labor, but does not include the cost of taxes, General or Electrical Contractor markups, conduit or electrical power for the systems, millwork, or any special architectural requirements.

F. The pricing must be compiled with other related budgets such as network data distribution, furniture, millwork, electrical, and mechanical systems to provide a complete picture of the associated costs.

INTRODUCTION

3.0 INFRASTRUCTURE VS. EQUIPMENT:

The distinction between infrastructure and equipment must be emphasized:

Infrastructure is part of the building construction and includes conduit, raceways, junction and device boxes, as well as electrical power and grounding required exclusively for audiovisual systems cabling and equipment. Properly designed AV infrastructure allows for not only the installation of the initially specified equipment, but for the evolution of the systems over many years. If proper infrastructure is provided, additional capabilities and equipment can be efficiently added later as technology progresses.

Equipment refers to the devices that can be connected through the infrastructure. Equipment includes microphones, loudspeakers, mixers, signal processing gear, video projectors, flat-panel displays, cameras, DVD players, AV control systems, patch bays, equipment racks, and many other devices that comprise an AV system, including cabling interconnections to AV devices.

One thing is certain; equipment will continue to change over the life of the room as user needs and technology change. For this reason, a properly designed infrastructure is the key to the long-term success of a thoughtfully conceived AV design project because it governs what can and cannot be easily installed in the future.

3.1 EQUIPMENT NOTES AND DEFINITIONS:

This report is not a technical specification and is insufficient to bid or build an AV system. Except where useful to illustrate a standard of performance or a specific user requirement, equipment manufacturers and model numbers are not used.

- Permanently-installed refers to equipment that will be part of the room systems and cannot easily be removed for use elsewhere.
- Portable refers to equipment that will be available for connection at one or more locations, but will not be hard-wired to the system. Portable equipment can be disconnected by the user or technical personnel and stored or used with systems elsewhere in the facility.
- Future Provisions refers to equipment that may be purchased and used or installed at a future date.
- OFE (Owner Furnished Equipment) refers to equipment that will be either already owned, or may be purchased in the future as needs arise.
- FBO (Furnished by Others or "by others") refers to any service or equipment (e.g. lighting) required but not a part of the AV system design or installation.

3.2 LIGHTING AND ACOUSTICAL RECOMMENDATIONS

Recommendations for lighting and room acoustics are guidelines only and should be reviewed by the architect and other consultants. These guidelines do not include considerations for the installation of the audiovisual equipment which should be considered as additional points of light and noise.

3.3 GENERAL TECHNOLOGY OVERVIEW

At this time, audiovisual systems are being transitioned from analog-formatted signals to digital systems. While there is some need to maintain compatibility and usability between both the analog and digital worlds, the transition is proceeding and the analog "sunset" (the discontinued use of analog video signals) is fast approaching. This program report assumes that digital video systems, backwards compatible with analog systems, will be used.

3.4 PRESENTATION SYSTEMS:

Presentation systems are the source, routing, and display devices that provide highly intelligible communication of speech, music, information, and graphics to groups of people. This includes equipment such as microphones, loudspeakers, video projectors, flat-panel video displays, DVD players, computers, and the interfacing, mixing, routing and control equipment that connects these devices together and allows the user to select the appropriate sources and operate the system.

3.5 BROADCAST SYSTEMS:

Broadcast quality equipment and systems generally refer to audio and video devices (cameras, video recorders and editing equipment) of the highest quality, specifically designed for the recording, editing, and production at the commercial level, such as in cable and network television studios.

In general, broadcast quality equipment will be an order of magnitude more expensive than "professional" quality equipment. Such equipment will be summarized in an add-alternate for this project.

3.6 ASSISTIVE LISTENING SYSTEMS:

Permanently installed Assistive Listening Systems (ALS) are required by the ADA (American with Disabilities Act), a 1990 federal law (2010 update) that forbids discrimination against persons who are hearing impaired. ALS systems are required in rooms that include permanently installed sound systems and the content (voice and program) is part of the transmission of information.

3.7 AUDIOVISUAL CONTROL SYSTEMS:

Audiovisual control systems used in these facilities may be as simple as the handheld display control for very simple systems to more integrated control panels for the more complicated room systems.

Audiovisual control systems can be used to unify and simplify the operation of the various functions of the AV system. This may includes environmental controls such as lighting presets and shade and drape controls, as well as audiovisual functions such as system and projector power, source selection and media transport controls, volume controls, and many other operational functions identified by the design team before the equipment will be installed.

Advanced functions of the AV control system include multi-level password protection for system operation to prevent unauthorized use, control of automatic system shut-down sequences (to reduce unnecessary wear and tear), and a help system interface for user experiencing technical problems.

3.8 CONTROL SYSTEM MANAGEMENT NETWORK:

Networked AV management systems automate and streamline many technical support functions. Built-in reporting provides the ability to track resource usage for more effective purchasing, scheduling and resource allocation. These systems can reduce response times for service calls and technical supports issues, because system users and presenters can send help requests directly from the touch panels. Technicians can respond with built-in instant messaging, then service and control devices remotely.

3.9 GENERAL CONTRACTOR & MISC. SCOPE:

The general contractor will supply all infrastructure requirements and the Owner will supply all LAN and workstation electronics.

AUDITORIUM

4.0 DESCRIPTION:

The Auditorium will be used for used for a variety of events including live music and theater performances, dance, multimedia presentations with audio and video, chaired meetings, and lectures.

4.1 AUDIOVISUAL EQUIPMENT:

The audiovisual system in the Auditorium will consist of a sound system used for speech reinforcement and program audio playback. The base system will include wired microphone inputs and two dual-channel wireless microphone systems, an automatic microphone mixer, a manually controlled digital mixing console, and associated processing and amplifiers.

Each dual-channel wireless microphone system will include an interchangeable handheld or lavalier style microphone per channel. Therefore, a total of four handheld wireless microphones and four lavalier microphones will be provided. Four wireless microphones will be usable at any given time.

A central loudspeaker cluster will be located above and in front of the proscenium opening. It will be used for speech reinforcement and playback of audio. Supplementary "delay" loudspeakers will be provided to cover the rear balcony and under-balcony areas, and front-fill loudspeakers will be used in the stage apron. The loudspeaker system will provide uniform audio coverage through the audience area; allowing the system to provide high levels of speech intelligibility and musical clarity. The program report assumes that a central loudspeaker cluster will be provided to cover the audience floor and side balconies. A more exact loudspeaker configuration will be developed for the auralization demonstration.

Connections for wired microphones and other audiovisual sources will be located on wall-mounted receptacle panels. These will be located on the stage (upstage and downstage walls, and front face of the stage), the catwalk (if applicable), and within the house. Audio press feeds will be available at receptacle panels.

The sound system will consist of two basic microphone mixing modes; automatic and manual. These modes will be selectable from the wall-mounted control panel.

- Automatic Microphone Mixing Mode: This mode will allow an end-user to simply connect a microphone to the system at one of multiple designated microphone receptacle locations. Master volume control will be accessible from the control panels. This will be the system's default setting and will be used for meetings and lectures. For chaired meetings, additional controls will be made available from the audiovisual control system, allowing the chairperson to mute/unmute microphones.
- Manual Microphone Mixing Mode: For events when more complex operation of the sound system is required, the automatic microphone-mixing can be bypassed and the system can be run by a trained operator. Volume levels of microphones and other AV sources will be controlled from a 48-channel digital mixing console; providing a flexible variety of audio outputs that can be used for special effects, recording, and speech reinforcement. The mixing console will be portable and can be placed on a desk within the Control Room, or

can be moved within the house at a dedicated house mix position. The mixing position desk will require ample space for operation of the console and other items such as scripts required for rehearsals or performances.

A stereo microphone will be suspended above the stage area and will connect to the audiovisual system. A CD recorder will be provided for simple stereo recordings of performances. Audio patching facilities will be included within the AV equipment rack, and will allow a user to re-route audio signals, or attach more complex audio recording equipment to the system.

We understand that Cary Memorial Hall already owns a video projector which is mounted in the Control Booth. The audiovisual program document assumes that this video projector will be re-used, but equipment will be provided to support digital and analog video playback. The projector will display motion video and still images onto an existing motorized projection screen (a projection screen upgrade is described later in this report as add-alternates).

The system will support playback and distribution of digital and analog video formats including VGA, HDMI, DVI, composite, and S-Video. AV sources devices, housed in the main AV equipment rack, will include a high-definition DVD player (Blu-Ray), and will include additional capability for the connection of an owner-provided source, such as a computer. Additional audiovisual connections for portable AV equipment, such as a presenter's laptop computer, will be available on receptacle panels (two on the upstage side of the proscenium, and one in the Control Booth).

An integrated control system will allow components of the audiovisual system to be operated from selected uniform control points; one wireless panel for use at the auditorium house control position, the control booth, or at a lectern (lectern provided by others), and a wall-mounted panel at the stage manager position on the stage. The control points will provide the end-user with easy control and configuration of the regular functions of the audiovisual system, such as:

- Turn the system on/off.
- Make adjustments to the volume of the loudspeakers.
- Turn on/off delay loudspeakers.
- Recall lighting presets.
- Operate rack-mounted AV source equipment.
- Operate the video projector and projection screen.
- Recall mode presets

The typical control system user interface is a color liquid crystal display (LCD) panel with a touch sensitive overlay. Graphics displayed on the panel will easily guide the user through the operation of the audiovisual system.

A wireless assistive listening system is included to meet the requirements of the Americans with Disabilities Act. Portable receivers will be stored centrally and issued to participants as required. These receivers are for use by the patrons with hearing impairments. In addition, inductive neck loop receivers will be provided for patrons with compatible hearing aids.

AV system processing, switching, control, and amplification equipment will be located in equipment racks located in the Auditorium Control Booth.

4.2 BUDGET:

Auditorium Base Audiovisual System:

Description	Cost
Wired Microphones	$1,900
Wireless Microphones	$16,200
AV Sources & Recording Devices	$1,900
48-Ch. Digital Mixing Console & Accessories	$19,500
Audio Signal Processing & Distribution	$6,500
Power Amplifiers	$6,100
Loudspeakers & Accessories	$19,400
Assistive Listening System	$7,300
Equipment Rack, Rack AC Power, & Accessories	$3,200
Control System, Touch-panels, & Accessories	$7,300
Video Processing & Distribution	$9,800
Connection Panels & Accessories	$2,000
Miscellaneous (Patching, Wiring, Multi-pin Snakes, Etc.)	$14,300
Equipment Total	*$115,400*
Installation & Other Non-Equipment (40%)	*$46,100*
Contingency (5%)	*$5,800*
Total Estimate	**$167,300**

General Contractor & Miscellaneous Scope Services:

Description	Cost
Conduit & Electrical	By Others

Note: All calculations are rounded to the nearest hundred dollars.

4.3 ADD ALTERNATES:

Add Alternate 1: Left and Right Loudspeakers

Left and right loudspeakers will be added to the sound reinforcement system. These loudspeakers will be used for stereo audio playback, and can also be used for sound effects, which can be panned across the left, center, and right loudspeakers. This add-alternate includes the pricing for the additional loudspeakers, as well as additional audio signal processing and amplification systems required.

Description	Cost
Equipment Total	*$12,000*
Installation & Other Non-Equipment (40%)	*$4,800*
Contingency (5%)	*$600*
Total Estimate	**$17,400**

Add Alternate 2: Production Communication/Intercom System

An intercom system will be used for communication between production crew members at control locations, and relevant backstage spaces such as the Green Room and dressing rooms. The typical intercom system includes either two or four channels. AV connection panels within the Auditorium will include receptacles for the connection of intercom beltpacks. Wall-mounted stations will be located in the other spaces. The system will be provided with four single-channel beltpacks and 2 dual-channel beltpacks with headsets and cables.

Description	Cost
Equipment Total	*$5,600*
Installation & Other Non-Equipment (40%)	*$2,300*
Contingency (5%)	*$300*
Total Estimate	**$8,200**

Add Alternate 3: Additional Wireless Microphones

Four additional dual-channel wireless handheld microphones will be provided, adding an additional eight wireless microphones to the system. These wireless microphones will integrate easily with the wireless microphone systems provided in the base audiovisual system.

Description	Cost
Equipment Total	*$25,300*
Installation & Other Non-Equipment (40%)	*$10,100*
Contingency (5%)	*$1,300*
Total Estimate	***$36,700***

Add Alternate 4: Portable Loudspeakers

Two powered loudspeakers will be provided. These loudspeakers can be used as fold-back monitors for onstage use during performances and lectures. Additionally, the loudspeakers can be used elsewhere on stage, or near any of the various AV receptacle panels within the house (receptacle panels are part of the base AV system). When connected to these receptacle panels, audio feeds can be sent to the powered loudspeakers from the audio mixing console, and can be used for sound effects. A pair of tripod stands and cables will be provided for use with the portable loudspeakers.

Description	**Cost**
Equipment Total	*$3,700*
Installation & Other Non-Equipment (40%)	*N/A*
Contingency (5%)	*N/A*
Total Estimate	***$3,700***

Add Alternate 5: Motorized Projection Screen

A large motorized video projection screen will be provided to replace the existing video projection screen. Given the room geometry, an image height of 16'-0" is appropriate. Therefore, the screen will include an overall image area of 16' high x 28'-5" wide (16:9 widescreen format). The projection screen will connect to the audiovisual control system for operation of the screen controls. *It is important to note that this add-alternate does not include costs for modifications to the existing video projector. A different lens may be required in order to fill the image area.*

Description	**Cost**
Equipment Total	*$66,900*
Installation & Other Non-Equipment (15%)	*$10,000*
Contingency (5%)	*$3,300*
Total Estimate	***$80,200****

A lesser expensive option for this add-alternate is available. This projection screen will include approximately the same dimensions and will also be motorized. However, this option will not include a case that is used to house the screen when not in use.* ***The total price for this option is approximately $21,700.*

Add Alternate 6: Broadcast Video Production System

Four motorized pan/tilt/zoom cameras will be provided for installation within the Auditorium. The add alternate will also include a joystick controller for operation of the cameras, a video production switcher, two video display monitors (for program and preview), a rack console, and video interface equipment that will allow this sub-system to receive video feeds from the Auditorium's video presentation system (laptop feeds, etc).

Wiring will be provided as part of this alternate to the Estabrook, Bird, Ellen Stone, Legion, and Civil rooms. In each room, an HD-SDI and audio tie-line connection will be available that will connect to the Auditorium Control Room. This will allow LexMedia to use a portable camera and microphone to record/broadcast events from these spaces.

Note: During the programming meeting with the end-users, LexMedia had requested a total of five motorized pan/tilt/zoom cameras. However, in order to have five cameras connected to the production switcher simultaneously, a more complex switcher is required. Therefore, to keep consistency with the Lexington High School equipment, and reduce complexity and cost, we have reduced the total quantity of cameras in the Auditorium to four.

Description	**Cost**
Equipment Total	*$57,900*
Installation & Other Non-Equipment (40%)	*$23,100*
Contingency (5%)	*$2,900*
Total Estimate	***$83,900***

Add Alternate 7: Lobby Audio

Ceiling-mounted loudspeakers will be distributed in the main lobby. These loudspeakers can be used for monitoring of events during performances, background music, or to recall patrons during an event (using a chime). The add-alternate includes pricing for ceiling-mounted loudspeakers, and associated amplification and distribution equipment.

Description	**Cost**
Equipment Total	*$3,400*
Installation & Other Non-Equipment (40%)	*$1,400*
Contingency (5%)	*$200*
Total Estimate	***$5,000***

Add Alternate 8: Lobby Video Displays

Two wall-mounted 46" professional video display panels will be located in the lobby. These displays will be used to display digital signage (which can be used for wayfinding, displaying show times for events, or other announcements), or camera feeds from the auditorium. Video content for digital signage can be provided as a computer feed (computer, by owner).

The add-alternate includes pricing for the two video display panels, and upgrades the video processing equipment in the base equipment to accommodate the additional connectivity that will be required.

Description	**Cost**
Equipment Total	*$26,100*
Installation & Other Non-Equipment (40%)	*$10,400*
Contingency (5%)	*$1,300*
Total Estimate	***$37,800****

A lesser expensive option for this add-alternate is available. The same two wall-mounted video display panels will be provided, but the system will not allow for video feeds from the cameras. Video content for signage will be provided as a computer feed (computer, by owner).* ***The total price for this option is approximately $19,200.*

Add Alternate 9: Green Room Video and Audio Monitoring

A wall-mounted 46" consumer level video display panel will be wall-mounted in the Green Room. This display will be used to show a camera feed from one of the broadcast cameras in the Auditorium. In addition, audio will be sent from the auditorium sound system to the video display panels' built-in speakers, allowing users in the Green Room to hear events as they are occurring within the Auditorium.

Description	**Cost**
Equipment Total	*$4,800*
Installation & Other Non-Equipment (40%)	*$1,900*
Contingency (5%)	*$200*
Total Estimate	***$6,900***

SMALL MEETING ROOMS

5.0 DESCRIPTION:

Typical Small Meeting Rooms will include the following spaces:

1. Ellen Stone Room
2. Legion Room
3. Civil Room

Each Small Meeting Room will be used for used for multimedia presentations with audio and video.

5.1 AUDIOVISUAL EQUIPMENT:

The audiovisual systems for each Small Meeting Room will include a wall-mounted 70" video display panel. The system will support playback of digital and analog video formats including VGA, HDMI, DVI, composite, and S-Video.

AV connections for a presenter's laptop computer and/or other portable video equipment will be available through a table-top cable enclosure installed in the meeting room desk. These cables will route through a floor-box, and then be fed through conduit to the wall-mounted display. Program audio playback (such as audio from a laptop computer) will occur through the integrated speakers in the video display panel.

Control of the AV system will occur via the handheld manufacturer-provided remote control. Typical functions will include:

- Turn the system on/off.
- Select video source.
- Make adjustments to the volume of the loudspeakers.

A wireless assistive listening system is included to meet the requirements of the Americans with Disabilities Act. A wireless transmitter will be provided with each meeting room. Portable receivers will be stored centrally and issued to participants as required. These receivers are for use by the patrons with hearing impairments.

5.2 BUDGET:

Typical Small Meeting Room Base Audiovisual System:

Description	Cost
Assistive Listening System	$1,200
Video Display Panel	$3,000
Connection Panels & Accessories	$900
Miscellaneous (Patching, Wiring, Multi-pin Snakes, Etc.)	$500
Equipment Total	*$5,600*
Installation & Other Non-Equipment (40%)	*$2,200*
Contingency (5%)	*$300*

Total Estimate (per room)	**$8,100**
Total Estimate (includes three rooms)	**$24,300**

General Contractor & Miscellaneous Scope Services:

Description	**Cost**
Conduit & Electrical	By Others

Note: All calculations are rounded to the nearest hundred dollars.

ESTABROOK HALL

6.0 DESCRIPTION:

Estabrook Hall will be used for used for a variety of events including small performances, multimedia presentations with audio and video, meetings, and lectures.

6.1 AUDIOVISUAL EQUIPMENT:

The audiovisual systems for Estabrook Hall will include a ceiling-mounted video projector located towards the back of the room. Images will be displayed onto a ceiling-mounted 78" high x 139" wide motorized projection screen. The system will support playback and distribution of digital and analog video formats including VGA, HDMI, DVI, composite, and S-Video.

The sound system will be used for speech reinforcement and program audio playback. It will consist of a pair of program audio loudspeakers located on the stage wall, and distributed ceiling-mounted loudspeakers for speech reinforcement. Wired microphone inputs will be available at the stage location.

AV sources will include a Blu-ray player, and owner-provided sources such as a cable television receiver or computer. AV connections for a presenter's laptop computer and/or other portable video equipment will be available through connections on receptacle panels located at the stage.

An integrated control system will allow components of the audiovisual system to be operated from selected uniform control points; one wired panel located to the side of the stage, and another wired panel located in back of the room. The control points will provide the end-user with easy control and configuration of the regular functions of the audiovisual system, such as:

- Turn the system on/off.
- Make adjustments to the volume of the loudspeakers.
- Recall lighting presets.
- Operate rack-mounted AV source equipment.
- Operate the video projector and projection screen.
- Recall mode presets

The typical control system user interface is a color liquid crystal display (LCD) panel with a touch sensitive overlay. Graphics displayed on the panel will easily guide the user through the operation of the audiovisual system.

A wireless assistive listening system is included to meet the requirements of the Americans with Disabilities Act. Portable receivers will be stored centrally and issued to participants as required. These receivers are for use by the patrons with hearing impairments.

All fixed AV sources, system processing, switching, control, and amplification equipment for the rooms will be located within an equipment rack located in or near Estabrook Hall.

6.2 BUDGET:

Estabrook Hall Audiovisual System:

Description	Cost
AV Sources	$400
Power Amplifiers	$1,400
Loudspeakers & Accessories	$1,500
Assistive Listening System	$1,400
Equipment Rack, Rack AC Power, & Accessories	$2,800
Touch-panels Controls & Accessories	$5,100
Video/Audio Processing, Distribution, & Control	$10,800
Video Projector & Accessories	$3,000
Motorized Projection Screen	$4,300
Miscellaneous (Wiring, etc.)	$3,000
Equipment Total	*$33,800*
Installation & Other Non-Equipment (40%)	*$13,500*
Contingency (5%)	*$1,700*
Total Estimate	**$49,000**

General Contractor & Miscellaneous Scope Services:

Description	Cost
Conduit & Electrical	By Others

Note: All calculations are rounded to the nearest hundred dollars.

BIRD ROOM

7.0 DESCRIPTION:

The Bird Room will be used for used for a variety of events including multimedia presentations with audio and video, meetings, banquets, and lectures.

7.1 AUDIOVISUAL EQUIPMENT:

The audiovisual systems for the Bird Room will include one wall-mounted 80" video display panel. The system will support playback of digital and analog video formats.

AV sources will include a Blu-ray player, and owner-provided sources such as a cable television receiver or computer. AV connections for a presenter's laptop computer and/or other portable video equipment will be available through connections on a wall-mounted receptacle panel.

The sound system will be used for speech reinforcement and program audio playback. It will consist of distributed wall-mounted loudspeakers for speech reinforcement. Wired microphone inputs will be available at the wall-mounted receptacle panel.

An integrated control system will allow components of the audiovisual system to be operated from one wired wall-mounted control panel. The control point will provide the end-user with easy control and configuration of the regular functions of the audiovisual system, such as:

- Turn the system on/off.
- Make adjustments to the volume of the loudspeakers.
- Recall lighting presets.
- Operate rack-mounted AV source equipment.
- Operate the video display panels.
- Recall mode presets

The typical control system user interface is a color liquid crystal display (LCD) panel with a touch sensitive overlay. Graphics displayed on the panel will easily guide the user through the operation of the audiovisual system.

A wireless assistive listening system is included to meet the requirements of the Americans with Disabilities Act. Portable receivers will be stored centrally and issued to participants as required. These receivers are for use by the patrons with hearing impairments.

All fixed AV sources, system processing, switching, control, and amplification equipment for the rooms will be located within an equipment rack located inside a cabinet.

7.2 BUDGET:

Bird Room Audiovisual System:

Description	Cost
AV Sources	$400
Power Amplifiers	$1,200
Loudspeakers & Accessories	$1,600
Assistive Listening System	$1,400
Equipment Rack, Rack AC Power, & Accessories	$2,300
Touch-panels Controls & Accessories	$2,500
Video/Audio Processing, Distribution, & Control	$10,800
Video Display Panels & Accessories	$5,400
Miscellaneous (Wiring, etc.)	$2,600
Equipment Total	*$28,200*
Installation & Other Non-Equipment (40%)	*$11,200*
Contingency (5%)	*$1,400*
Total Estimate	**$40,800**

General Contractor & Miscellaneous Scope Services:

Description	Cost
Conduit & Electrical	By Others

Note: All calculations are rounded to the nearest hundred dollars.

MEETING ROOM ADD-ALTERNATES

8.0 DESCRIPTION:

The following add-alternates apply to the Small Meeting Rooms, the Bird Room, and Estabrook Hall.

8.1 ADD ALTERNATES:

Add Alternate 1: Motorized Video Camera

This add-alternate includes the price for a single wall-mounted motorized pan/tilt/zoom camera system, compatible with the Broadcast Video Production System add-alternate included earlier in this report. We understand that this add-alternate is primarily of interest for the Bird Room and Estabrook Hall. HD-SDI video signals will be distributed to a patch panel in the Auditorium Control Room equipment rack so that they can interface with the LexMedia broadcast system.

Description	Cost
Equipment Total	*$11,200*
Installation & Other Non-Equipment (20%)	*$2,200*
Contingency (5%)	*$600*
Total Estimate	***$14,000***

Add Alternate 2: Video Distribution to Meeting Room Displays

This add-alternate is includes the price to upgrade the Auditorium video processing equipment, as well as provide the additional components required to distribute video from the Auditorium's Broadcast Video Production System add-alternate (included earlier in this report) to the five other presentation spaces (the three Small Meeting Rooms, the Bird Room, and Estabrook Hall). Video signals will be connected to the video display systems in each room, and will be selectable via their respective control systems or remote controls.

Description	Cost
Auditorium Video Processor/Switch Upgrade	$13,700
Meeting Room Video Receiver ($1,400/ea x 5 rooms)	$7,000
Miscellaneous (Wiring, etc.)	$2,100
Equipment Total	*$23,300*
Installation & Other Non-Equipment (40%)	*$9,300*
Contingency (5%)	*$1,200*
Total Estimate	***$33,800***

ARCH/MECH/ELEC. CONSIDERATIONS

9.0 ARCHITECTURAL:

The following items should be considered for proper coordination between audiovisual components and other trades:

A. Wall and Ceiling-Mounted Loudspeakers:
   1. Loudspeaker coverage patterns must not be obstructed.
   2. Structural support for mounting and hanging of loudspeakers.

B. AV Equipment Rack Locations:
   1. The location of the equipment rack within millwork will require proper coordination with the Architect.
   2. Proper installation and service access space for fixed rack locations.
   3. For in-wall or millwork mounting racks will need blocking and/or ventilation.

C. Equipment racks in closets will need over-height doors.
   1. Video/Data Display Systems:
   2. Support for the wall-mounted video displays will require further coordination with the Architect.
   3. Support for the ceiling suspended video projectors will require further coordination with the Architect.
   4. The mounting of the projection screens will require further coordination with the Architect.
   5. Coordination with the room curtains and lighting systems is required.

D. Connection Panel Locations:
   1. Connection panel locations will require further coordination with the electrical engineer and the Architect.

E. Wall-Mounted Antennas:
   1. Antennas for the assistive listening system and wireless microphones will be mounted on the wall.

F. Floor Box/Poke-Through and Wall-Mounted Connection Panel Locations:
   1. Floor-box and wall-mounted Connection panel locations will require further coordination with the electrical engineer and the Architect.

G. Hanging Microphones:
   1. Hanging microphones used for recording should not be located near noisy objects (such as video projectors) or in direct path airflow originating at HVAC supply vents.

H. AV Millwork:
   1. AV equipment mounted in credenzas and/or lecterns will require proper coordination with the Architect.

9.1 MECHANICAL / ELECTRICAL:

The following items should be considered for proper coordination between audiovisual components and other trades:

A. AV Equipment Rack Locations:
   1. The location of electrical power, tel/data connections, and back-boxes and conduit will require proper coordination with the Architect and Mechanical/Electrical Engineer (MEP).
   2. Proper ventilation will be required to maintain proper cooling of sensitive audiovisual equipment.

B. Video/Data Display System:
   1. The location of electrical power, tel/data connections, and back-boxes and conduit will require proper coordination with the Architect and Mechanical/Electrical Engineer (MEP).
   2. Coordination with the room curtains and lighting systems is required.

C. Connection Panel Locations:
   1. Connection panel locations will require further coordination with the electrical engineer and the Architect.

D. Wall-Mounted Antennas:
   1. Antennas for the assistive listening system and wireless microphones will be mounted on the wall.

E. Floor Box/Poke-Through and Wall-Mounted Connection Panel Locations:
   1. Floor-box and wall-mounted Connection panel locations will require further coordination with the electrical engineer and the Architect.

F. AV Millwork
   1. AV equipment mounted in credenzas and/or lecterns will require proper coordination with the Architect.
   2. Proper ventilation will be required to maintain proper cooling of sensitive audiovisual equipment.

G. AV Power Loads:
   1. The AC power supply to all audiovisual systems must be coordinated for panel loading and phasing.

ADDENDUM TO AUDIOVISUAL PROGRAM REPORT

10.0 GENERAL:

The following section summarizes changes to this audiovisual program report and is based upon the review meeting held on November 28, 2012 with the Lexington council members, Mills Whitaker Architects, and Acentech.

10.1 AUDITORIUM:

Add Alternate 7: Lobby Audio

In addition to the functions described earlier in this report, this sub-system will include speech reinforcement for local presentations. Connections for wired microphones will be available on a receptacle panel in the Lobby. Additionally, a wall-mounted push-button panel will be provided for local control of the system (power on/off the local system, volume control, source selection, etc). Additional audio processing and assistive listening system equipment will also be provided.

Description	Cost
Equipment Total	*$5,800*
Installation & Other Non-Equipment (40%)	*$2,300*
Contingency (5%)	*$300*
Total Estimate	***$8,400****

**This price represents an increase of $3,400 from the originally estimated cost for this add-alternate.*

10.2 MEETING ROOMS:

Broadcast Camera Connections:

In addition to the functions described earlier in this report, each meeting room will include one connection panel with wiring that will allow users to connect a high definition video camera and microphone (or line level audio signal) to the Auditorium's Broadcast Video Production System. ***This additional connectivity will add approximately $650 to the total estimated price of each Meeting Room Base AV System*** (this is applicable for each of the three Small Meeting Rooms, Estabrook Hall, and the Bird Room). This also assumes that the Broadcast Video Production System add-alternate has been included.

Remote Meetings:

During the review meeting, there was discussion about the need for the AV systems in the Meeting Rooms to be used for remote meetings (video/audio conferencing) in the future. For this reason, it further emphasizes the importance of including hard-wired data connections (allowing AV equipment to connect to the IT network) and appropriate AV infrastructure (conduit and AC power) to support this as a future upgrade.

IMAGE FROM AURALIZATION BY ACENTECH

Isaac Harris Cary Memorial Building Renovation
1605 Massachusetts Avenue
Lexington, Massachusetts

Contract No. 13-06

SUMMARY OF RECOMMENDED IMPROVEMENTS

OUTLINE SPECIFICATIONS FOR RECOMMENDED IMPROVEMENTS

NOTES REGARDING SUMMARY & SPECIFICATIONS

The Outline Specifications (pp. D-2 thru D-10; Nov 1, 2012) included a range of options and alternates that were used to establish budget pricing. The Summary (p. D-1; Nov 29, 2012) expresses the final version of the recommendations after scope reviews were completed.

SUMMARY OF RECOMMENDED IMPROVEMENTS
Cary Memorial Building
29 November 2012

A: Life Safety Improvements:

Exterior Accessibility: Provide accessible parking spaces by the front entrance and replace the existing non-compliant entrance ramp.

Interior Accessibility: Make the majority of public interior spaces accessible, including the Main Stage, Green Room, Estabrook Stage and the Bird Room. Seek a variance for not providing handicap access to the Civil Room ($100k cost). Provide wheelchair seating at the auditorium balcony.

Other Improvements: Extend the automatic sprinkler system into missing areas that lack protection. Provide handrails in the balcony areas and make improvements to existing guards and handrails in the back exit stairs. Improve stage rigging, gridiron supports, operability of the fire curtain and the stage smoke exhaust system.

B: Building System Improvements:

Structural Repairs: Provide repairs of exterior brickwork, stonework, lintels and related flashings in selected areas. Repair settled and cracked concrete slabs and terrazzo in selected areas.

Public Toilet Rooms: Renovate the Basement level Men's and Women's Rooms, significantly expanding the capacity of the latter.

Boilers: Replace the existing steam boilers with high efficiency hydronic boilers serving both the Cary Memorial Building and the Town Offices Building. Remove exterior underground fuel oil storage tank and provide small interior tank for the emergency generator.

Ventilation: Provide quiet ventilation systems in Battin Hall and Meeting Rooms, replacing the existing noisy venting and non-venting systems in all areas. Provide temperature actuated attic ventilation system and re-insulate attic.

Chiller Noise: Remove the existing 200-ton air-cooled chiller adjacent to Battin Hall and provide a quieter, more efficient 120-ton air-cooled chiller adjacent to the Stage (away from Hall windows).

Electrical Switchgear: Remove main circuit breaker panels from the Stage where they pose a hazard and provide replacement panels in the Basement. Replace and relocate the transformer.

C: Facility Usability Improvements:

Battin Hall: Improve speech amplification system and performance/house lighting systems. Replace existing removable thrust stage with a permanent thrust stage. Provide related audio-visual improvements (production intercom, portable loudspeakers, recording/broadcasting upgrades). Provide motorized variable acoustic wall treatment for optimization of "speech only" events.

Green Room: Provide a functioning Green Room area below the Stage per the original design intent. In its present configuration, this area has been used primarily for facility maintenance purposes.

Main Lobby: Provide sound attenuation at the ceiling areas without changing the character and appearance of the Lobby. Provide a speech amplification system for events held in the Lobby.

Estabrook Hall: Reconfigure entrance side of the room for better use of the space and for concealed storage of tables and chairs. Provide sound attenuating wall or ceiling panels for improved acoustics. Provide speech amplification, AV system and assistive listening to support meeting use.

Bird Room: Provide speech amplification, AV system and assistive listening to support meeting use.

Ellen Stone & Legion Rooms: Provide AV system and assistive listening to support meeting use.

SUMMARY OF RECOMMENDED IMPROVEMENTS

OUTLINE SPECIFICATIONS FOR RECOMMENDED IMPROVEMENTS
Cary Memorial Building
1 November 2012

Owner: Town of Lexington
Location: 1605 Massachusetts Avenue
Architect: Mills Whitaker Architects LLC
Estimator: Daedalus Projects Inc.

PROJECT DESCRIPTION

The Cary Memorial Building was constructed in 1927-1928 to serve a variety of municipal, social and educational functions. The facility hosts events such as the Town Meeting, Cary Lecture Series, Lexington Symphony and a variety of other community events and municipal activities. The historically significant building is located in the Battle Green Historic District of Lexington, MA. The focus of the current project is to make improvements to the facility in three distinct categories:

A: Life Safety Improvements
B: Building System Improvements
C: Facility Usability Improvements

In 2010-2011, the Town authorized a "Building Evaluation Study" that was completed by Mills Whitaker Architects on June 1, 2011. That study identified improvements that translated into a $7.75 million project cost if constructed in a single phase ($6.04m construction + $1.71m related costs) or $9.4 million if constructed in multiple phases (adds $1.65m to overall cost). Note that these 2011 conceptual project budgets were not escalated beyond 2011 for a future construction date since that future date had not yet been determined. In 2012, the Town authorized a "Building Renovation Study" to further define the project and determine a recommended scope of improvements that will offer the best public benefit for the Town.

The scope established by this 2012 study for the renovation is described in these "Outline Specifications for Recommended Improvements" and in the "Schematic Pricing Set" of drawings. The intent of these documents is to provide information regarding the project in order to determine schematic pricing as a single phased construction project that, if approved by the Town, would be designed during the 2014 fiscal year with, pending approval, construction in FY 2015. Escalation values based on a July 2014 target date for the start of construction will be incorporated into the construction estimate.

The Schematic Estimate shall be prepared in three categories (A, B, C) as noted above. Budgeting within each of the three categories shall include its respective share of the costs associated with general conditions, bond, insurance, overhead, profit, estimating contingencies and similar expenses. It is the intent that the three categories will be performed simultaneously as a single integrated project. Hence, the purpose of estimating project costs by category will be to illustrate the relative cost of each grouping of the targeted improvements while monetizing the full project budget. The project as described cannot be split apart into three separate projects since the components are integrated and share the common goal of making appropriate improvements to the Cary Memorial Building.

The Cary Memorial Building will be unoccupied as of the start of construction until the date of substantial completion. Physical plant changes affecting heating, cooling and electrical power shall be carefully orchestrated and sequenced to accommodate the fact that the Cary Memorial Building shares its utilities with the adjacent Town Offices Building. The Town Offices Building will remain occupied throughout the project. The Town Offices are supplied with power, including emergency power, from Cary. Also, the

OUTLINE SPECIFICATIONS

steam boilers in Cary supply a converter that pumps hot water into the hydronic heating system used in the Town Offices. Furthermore, the air-cooled chiller in Cary provides chilled water that is pumped from the Cary boiler room into the Town Offices.

GENERAL REQUIREMENTS

The project will be regulated by MGL Chapter 149 and shall be publically bid by filed sub-bidders and general bidders. All bidders must be qualified by DCAM in their respective categories. The General Bid category shall be "Historic Building." Prevailing wage rates apply.

The project site is located in the Battle Green Historic District. Exterior work will require a "Certificate of Appropriateness" that will be secured by the Awarding Authority with assistance from the Architect.

A selection of targeted variances from the Massachusetts Architectural Access Board will be sought for the project due to the historic nature of the building and cost of full compliance as compared to the benefit gained for persons with disabilities. The Awarding Authority will seek variances from 521 CMR with assistance from the Architect.

Provide temporary partitions between individual work areas and adjacent areas where needed to control dust migration within the existing facility. Provide daily cleaning and removal of debris from the building and site to the satisfaction of the Owner and local fire department. Thoroughly clean the interior of the building and affected portions of the exterior, including all window glass, upon completion.

Provide two means of egress from all portions of the construction area for all personnel at all times. Maintain the integrity of the existing fire alarm system and emergency lighting systems during the project. Provide construction lighting where needed. Provide temporary toilets on site for use by the contractor's personnel. Provide temporary barricades to protect the public from areas of construction.

Retain the use of existing electrical systems for the Town Offices Building during the project. Minimize the downtime for changeover of the existing power supply system, coordinating with the Owner well in advance and providing additional generator power for ongoing supply to the Town Offices Building. Maintain the use of existing heating and cooling for the Town Offices Building based on the seasonal needs during the project. Provide temporary heat in the Cary Memorial Building when needed.

Provide pricing, including all related costs such as General Conditions, for the following Alternates as described within the respective categories of work:

Alternate No. 1 – Civil Room Accessibility (Category A)
Alternate No. 2 – Replace Existing Chiller (Category B)
Alternate No. 3 – Variable Acoustics in Hall (Category C)
Alternate No. 4 – Dance Surface at Hall Stage (Category C)
Alternate No. 5 – Audiovisual Improvement Options (Category C)

No sales tax shall be included in the cost of the work since the Awarding Authority is tax exempt. Permit Costs for the Town of Lexington shall be carried in the Contract Sum as follows:

$12 per $1,000 for Building & Mechanical (all work except electrical)
$25 per $1,000 up to $9,999 for Electrical, then $10 per each additional $1,000
$30 for Plumbing/Gas plus $7 per fixture
$200 for microfilm for projects $1 million and up

Note: The Auditorium in the building has recently been named "Battin Hall." References to "Cary Hall" or the "Auditorium" all apply to Battin Hall, the central meeting and assembly area of the building.

OUTLINE SPECIFICATIONS

A: LIFE SAFETY IMPROVEMENTS

This category of work focuses on improvements related to handicap accessibility and general life safety.

A1. SITE IMPROVEMENTS/ ACCESSIBLE PARKING: Provide accessible parking spaces and a drop off area at the front entrance. Renovate related granite curbing, bituminous concrete paving and brick walks. Resurface and re-stripe parking area at circular drive. Provide updated directional, parking and handicap signage at the driveway.

A2. SITE IMPROVEMENTS / MAILBOX LOCATIONS: Relocate existing mailboxes for municipal and regular mail drop-off onto concrete pad over compacted base at exit end of the driveway.

A3. SITE IMPROVEMENTS / SIDEWALKS: Reconstruct brick sidewalks in renovated areas adjacent to circular driveway to extent needed.

A4. SITE IMPROVEMENTS / ACCESSIBLE RAMP: Remove deteriorated and non-compliant entry ramp, cheek walls, railings and recessed lighting. Provide reconfigured fully compliant accessible ramp with granite pavers and granite cladding over reinforced concrete. Provide mill finish dual bronze handrails and concealed ramp lighting.

A5. SITE IMPROVEMENTS / BICYCLE RACK: Provide color galvanized steel bicycle rack (for twenty bikes) at brick pavers over concrete substrate between sidewalk and accessible ramp. Embed rack into concrete for secure attachment.

A6. ACCESSIBILTY TO ESTABROOK STAGE: Provide wheelchair access to the recital stage in Estabrook Hall via a two-stage ramp in lieu of existing corridor and stairs. Remove existing elevated concrete slab and stairs at west and north sides of the stage area, underpinning adjacent slabs to remain. Provide painted concrete ramp at west and north sides of stage. Provide painted pairs of steel handrails at each side of ramp. Provide textured VCT surfacing on the ramp.

A7. ACCESSIBILTY TO BATTIN HALL STAGE: Provide wheelchair access from Battin Hall up to the Stage and down to a Green Room via a 3-stop vertical wheelchair lift. Remove former Green Room-to-Orchestra Pit stairs and provide a floor level within the enclosure that aligns with Battin Hall. Modify millwork opening at the Hall side of doorway and provide matching doorway with automatic door operator. Provide framed opening in the Stage floor and provide shallow pit (3") in Basement slab. Provide one-hour rated hoistway walls and three rated landing doors with power operators. Vent hoistway (1 SF) with motorized damper (normally closed) to the exterior via a rated duct and storm louver. Damper opens in the event of temperature rise, fire alarm or power failure. Provide weather-tight storm louver in exterior brick masonry wall at east side of Stage.

A8. ACCESSIBILITY TO BIRD ROOM: Provide wheelchair access to the Bird Room via a 2-stop vertical wheelchair lift in the corridor and gallery area adjacent to the existing stairs. Remove section of guardrail and structure at Gallery Level. Provide framed opening in gallery and shallow pit (3") at second floor. Provide suspended framing to support structural modifications (suspend from reinforced attic trusses above; trusses will be reinforced for sound-isolated air handling room noted in Category B). Provide partial height hoistway walls (42" above gallery level) for wheelchair lift with full height door at second floor landing and 42" high door at gallery level outside of Bird Room.

A9. MODIFY DOORS FOR ACCESSIBILITY: Provide accessible door hardware (25 pairs; 12 singles) and automatic operators (8 pairs; 1 single) at existing doors. Request variance for double doors that are not in primary accessible route, are not 36" per leaf, and that will not receive auto operators.

A10. ACCESSIBILITY IMPROVEMENT / EXISTING HALLWAY RAMPS: Provide dual wood railings with painted steel brackets at existing sloping floor areas in the east and west First Floor corridors. Request variance at interrupted portion by doors into staff areas at former ticket booths.

A11. ACCESSIBILITY IMPROVEMENT / WHEELCHAIR SEATING: Provide accessible seating in various locations within the Balcony Level of Battin Hall as indicated in the drawings. Remove four adjacent seats in each wheelchair seating area at side balcony and infill floor level flush with upper cross aisle at Second Floor. Provide linoleum floor surfacing, perimeter curbing and safety rails. At back cross aisle, seat removal and patching of floor is required. Request variance for the provision of remaining required seating to be located in the loose seating areas of the main floor as they are currently.

A12. SAFETY IMPROVEMENT / BALCONY AISLE HANDRAILS: Provide handrails in the balcony for improved access and increased safety. Each tier of seating shall receive one handrail to allow for full access to each row of seating (aisles are too narrow to allow for handrails in the center of the aisles). Assume a total of 24 individually placed, single level, powder coated steel handrails. Also replace the central balcony front aisle handrail with a taller handrail to match the existing while respecting sight lines.

A13. SAFETY & ACCESSIBILITY IMPROVEMENT / BACK STAIRS: Remove existing non-compliant wall-mounted handrails and provide accessible wall-mounted handrails in back stair areaways. Remove and replace or modify existing open guardrails at back stairways to provide no more than 4" clear space between members. The "back stairs" include the exit stairways from Battin Hall and the communicating stairways between the Green Room and the Stage. Use steel handrail and guardrail components, factory primed and field painted. Fire watch required for welding in field.

A14. SAFETY IMPROVEMENT / AUTOMATIC SPRINKLERS: Extend existing automatic sprinkler system into unprotected areas, including Estabrook Hall, Lower Lobby, Stairs A thru D and Battin Hall. See recommendations on page 4 of Fire Protection Systems in Mechanical Engineer's Report for more information. Provide scaffolding for Battin Hall and use this staging for the lighting modifications indicated in Category C and for patching/painting as needed.

A15. SAFETY IMPROVEMENTS / STAGE RIGGING: Provide cable-mounted pendant operator for front-of-house lighting to allow for safe operation. Remove empty pipe battens and associated unused chains. Remove unused sheaves from gridiron. Remove abandoned counterweight rigging system on sidewall of fly gallery.

A16. SAFETY IMPROVEMENTS / STAGE FIRE CURTAIN: Repair operation of fire curtain by replacing bronze guides, re-terminating release line, and replacing nylon sheaves with metal. Remove electrical junction box from stage right smoke pocket at floor level due to its obstruction of fire curtain closure and relocate junction box backstage beyond the fire curtain track to eliminate the hazard.

A17. SAFETY IMPROVEMENTS / STAGE SMOKE EXHAUST: Replace smoke hatch rigging with upgraded winches with thermal links, test levers and lockable covers. Provide weatherization of copper cupola with interior rigid insulation and protective finish. Provide weather stripping at smoke hatch doors.

ALTERNATE 1: CIVIL ROOM ACCESSIBILITY

Modify central balcony aisle stairs to adjust riser placement 4" to south to provide 32" clearance for wheelchair access at front cross aisle to Civil Room. Saw-cut vertical face of stairs at each set of aisle stairs and chip out risers to the same depth. Parge, patch and paint concrete to restore appearance and match adjacent surfaces. Remove front row of fixed seating at central front cross aisle and replace with removable seating. Replace balcony railing and raise height for improved safety.

OUTLINE SPECIFICATIONS

B: BUILDING SYSTEM IMPROVEMENTS

This category of work focuses on improvements to existing structural, mechanical and electrical systems.

B1. EXTERIOR MASONRY REPAIRS: Rebuild and flash brickwork at water table on north elevation of exterior walls adjacent to parking lot driveway. Extend water table flashing at brickwork of west wing by Ellen Stone Room; rebuild or reset brickwork. Remove and reset granite plinths at each side of monumental entrance stairs; provide waterproofing at substrate and reassemble with wept cavity; rake joints in granite steps and provide backer rod over sealant. Replace rust-jacked lintels at 13 window/door openings; flash lintels and reconstruct brickwork. At east and west walls above flat roof areas in southeast and southwest corners: reconstruct, flash and weep lower portions of brickwork; remove rust and treat underlying steel beams; cut and repoint interior of brickwork to restore integrity of walls. Replace rotted wood sill and flash underlying wall at boiler room "window" opening in west façade by bottom of metal exit stairs. Repair brick screen wall at chiller and replace cap with flashed bluestone (2" thick, natural cleft, pinned and epoxy-set).

B2. INTERIOR STRUCTURAL REPAIRS: Repair cracked and settled basement concrete slab at west half of area below stage (at former dressing rooms). Repair rusted steel and cracked terrazzo at northern end of first riser along base of eastern basement stair outside of Estabrook Hall. Provide interior repairs and waterproofing at east wall of Estabrook Hall; repair finishes and wainscoting. Repair cracks in reinforced concrete slabs (presumably cosmetic) at Balcony Level of Battin Hall and repaint concrete floors in repaired areas.

B3. EXTERIOR ROOFING REPAIRS: Assumed to be handled via routine maintenance by the Town to check the slate roof areas and flashings, making repairs as needed. Existing tar and gravel roofing at the two flat roofed areas appear to be in good condition. No known leaks at the copper smoke exhaust cupola, chimneys or other penetrations. No costs associated with roofing in this budget.

B4. IMPROVE & EXPAND TOILET ROOMS: Renovate basement toilet rooms to expand the number of fixtures (for women) and to incorporate accessible fixtures within each room. This involves trading locations of the Men's and Women's Rooms, eliminating the Unisex Toilet Room and reconfiguring the spaces. Remove existing terrazzo and concrete floors in toilet rooms and provide replacement slabs and terrazzo to match. Provide floor drains and slope floors to drains. Provide water conserving fixtures (sinks with Toto eco-turbine faucets, low flow urinals, dual-flush toilets), durable toilet partitions and solid surface counters with under-mount sinks. Provide stainless toilet accessories and grab bars. Improve toilet exhaust systems and replace all water and sanitary piping.

B5. OTHER PLUMBING IMPROVEMENTS: Provide accessible drinking fountain adjacent to existing accessible toilet room at west side corridor of First Floor.

B6. REMOVE STEAM BOILERS / PROVIDE EFFICIENT HYDRONIC BOILERS: The steam boilers provide heating to Cary Memorial Building (via steam) and the Town Offices Building (converted to hot water). Remove both boilers and provide three smaller, efficient hydronic boilers as recommended by the Mechanical Engineer. Provide the required increase in natural gas service from the main supply lines underground in Massachusetts Avenue. Renovate the Boiler Room for the reduced footprint of the equipment and construct a Facility Workshop within the adjacent space. Sequence the work for ongoing heating (depending upon the season) to the occupied Town Offices Building, and for providing temporary heat in Cary Memorial Building to the extent needed.

B7. REMOVE UNDERGROUND OIL TANK: Remove the 10,000 gallon underground fule oil tank that currently serves the dual fuel steam boilers since they will be removed and gas hydronic boilers will be provided. Provide a small interior fuel oil tank for serving the emergency generator.

B8. REMOVE ORIGINAL FANS IN ATTIC / PROVIDE SOUND-ISOLATED AIR HANDLER: Remove original supply air and exhaust/return air fans and all associated ductwork from the Attic. Provide a room at the south end of the attic and sound isolate the room from the adjacent structure. Modify and reinforce existing steel trusses for support and isolation of air-handling equipment. Provide sound-lined and insulated oversized ductwork in attic. Connect ductwork to existing vertical chases and supply/return air grilles for service to Battin Hall. Provide opening in east exterior wall for fresh air louver for ventilation and economizer cycle.

B9. PROVIDE ATTIC VENTILATION SYSTEM & INSULATE ATTIC: Provide sound-isolated attic ventilation system for controlling temperature and humidity, using louver of original intake air for exhaust (at NW corner of attic). Enclose fan in sound partition system. Remove partial coverage of loose fill fiberglass from attic floor and provide 10" of continuous mineral wool batt insulation.

B10. REDUCE INTERIOR NOISE OF AIR-COOLED CHILLER: Attenuate noise transfer from the existing 200-ton chiller to Battin Hall, Ellen Stone Room & Civil Room. Provide sound attenuation package of compressor wraps and attenuation stacks. Provide sealed interior fixed storm window panels of ½" laminated glass the full width of interior plaster jambs at west side of Battin Hall and north side of Ellen Stone and Civil Rooms to reduce noise. (Alternate No. 2 deletes all of this work if accepted.)

B11. OTHER HVAC IMPROVEMENTS: Replace existing steam radiators with hydronic gravity convection heating units. Improve ventilation distribution system to the central balcony and under the balcony in Battin Hall, providing new chases, grilles and registers to connect to the attic air handling system. Provide hydronic heating and tempered ventilation air to all meeting rooms, removing existing noisy fan coil units and isolated steam radiators. Provide new chases and ductwork to meeting rooms. Provide temperature and humidity control in the original vault and adjacent records storage area in the Basement. Refer to improvements as referenced in the Mechanical Engineer's Report.

B12. REMOVE ELECTRICAL SWITCHGEAR FROM STAGE: Remove existing electrical switchgear from First Floor stage area. Remove the exterior transformer and related conduits and pull boxes from the exterior. Patch masonry walls and repair pavement in area of work. Provide replacement switchgear equipment in the Basement electrical room. Provide pad-mounted transformer in new location and provide replacement underground primary from pole at north property line. Provide replacement underground secondary conduits into the Basement equipment area and seal exterior walls watertight. Sequence the work to allow for continuing power to be provided to the occupied Town Offices Building, supplementing the capacity of the existing emergency generator during the changeover by providing additional emergency generator power temporarily.

B13. MODIFY EMERGENCY GENERATOR TRANSFER: Rework the emergency transfer switch arrangement per the Electrical Engineer's recommendations for safe operation of egress and exit lighting. Rework the emergency generator exhaust system that currently terminates just above the brick retaining wall at the air-cooled chiller; reroute and extend exhaust piping to above the roof area and above the brick parapet wall separating the main slate roof from the adjacent flat roof areas.

B14. OTHER ELECTRICAL WORK: Provide additional power wiring, disconnects and circuitry as needed to upgrade HVAC equipment at described in Mechanical Engineer's system recommendations.

ALTERNATE 2: REPLACE EXISTING CHILLER

In lieu of providing a sound attenuation package for the existing chiller and adding interior storms at the window openings adjacent to the chiller, provide a replacement chiller adjacent to the stage area away from the windows as shown on the drawings. The chiller will be a 120-Ton air-cooled scroll unit similar to Trane CGAM with the optional "Comprehensive Acoustic Package." Provide underground insulated chilled water piping from the Boiler Room to the unit. Locate the chiller at the existing location of the electrical transformer on a concrete pad. Provide protective concrete-filled bollards at the perimeter adjacent to the parking lot area. Infill the brickwork in the existing exterior wall upon removal of the existing above-grade chilled water piping from the existing chiller. Sequence the work for ongoing cooling (depending upon the season) to the occupied Town Offices Building.

C: FACILITY USABILITY IMPROVEMENTS

This category of work focuses on improvements for effective use of the main hall and meeting rooms.

C1. IMPROVE BATTIN HALL SPEECH AMPLIFICATION SYSTEMS: Replace the existing speaker system and related components in order to improve speech clarity. Improve assistive listening systems for the hearing impaired. Provide wiring, circuitry, cutting and patching as needed for system integration. Provide storage space for associated equipment racks. Refer to Alternate 5 for additional options.

C2. IMPROVE BATTIN HALL STAGE: Replace temporary stage extension with an integrated permanent thrust stage. Provide permanent thrust stage with maple flooring and wood-paneled apron to match existing and adjacent surrounds. Provide stairs at west side with wall-mounted wood handrail. Provide readily removable and securely attached guardrails for all three sides of the permanent thrust stage so that it can be used for alternate activities as additional floor space in the Hall (e.g., for annual quilt show or other non-performance related events).

C3. IMPROVE LIGHTING IN BATTIN HALL: Improve performance and house lighting. Provide recessed downlights for house lighting and restore the decorative exposed necklace of lighting into dimmable clear incandescent bulbs as originally intended. Restore the perimeter pendant lanterns at the balcony level. Provide six motorized line sets rigged from the existing gridiron for three additional sets of stage lighting. Provide other performance lighting improvements as noted in the Lighting Consultant's Report. Make use of the scaffolding to be provided under Category A for extending the automatic sprinkler system. Provide temporary vertical access or scaffolding on the stage. Provide power, switching and fixtures to upgrade performance and house lighting as needed.

C4. RESTORE GREEN ROOM: Renovate former dressing room under portion of the stage for use as a Green Room with accessible toilet room, sinks, dressing cubicles and catering kitchen for cast. Provide painted drywall (walls and ceilings) and VCT flooring in the Green Room. Provide sound-isolated ceiling from Stage above (resilient hangers, mineral wool insulation, double layers of drywall). Under the two existing stage floor access hatches, add hinged doors in the ceiling and weather-strip for sound isolation. Reconfigure western portion of the former dressing room as a reduced facility storage area. Provide renovated lighting, power, emergency lighting and exit signs.

C5. IMPROVE ESTABROOK HALL: Reconfigure the south end of Estabrook Hall to remove the booth, modify stairs, remove the gallery and integrate storage (tables/chairs are currently stored on the small stage when not in use). Extend main floor level to south wall and provide concrete slab to match level of existing terrazzo. Provide painted concrete slab within the storage area. Provide carpet at main floor level of Estabrook Hall (existing terrazzo is damaged) and linoleum on the reconfigured raised south entry area and stairs. Provide painted decorative metal railings with

moulded wood cap to match existing railings at ramp (and at gallery area to be removed). Provide sound-absorptive, tackable, fabric-covered wall panels on the east and west walls to reduce reverberation in the room. Replace and upgrade electrical panels and wiring in Estabrook Hall. Restore original lighting and make other improvements as noted by the Lighting Consultant.

C6. REDUCE LOBBY NOISE LEVELS: In the Entrance Lobby, provide stretched fabric over glass fiber at the central vaulted ceiling and at the three adjacent level ceiling areas, matching existing appearance of the ceilings while improving acoustics. Provide sound gaskets at all doors into Battin Hall and into the meeting rooms to reduce noise transmission from lobbies and adjacent hallways.

C7. OTHER IMPROVEMENTS: Refinish maple floors on the Stage and Battin Hall main floor area. Repaint concrete floors in the Balcony, Back Stairways, Facility Storage and Boiler Room. Paint the interior spaces in all areas of work, including Battin Hall, meeting rooms, lobbies and stairways. Replace carpet in Ellen Stone, Legion, Bird, Robbins and Civil Rooms. Provide improvements to lighting systems in the meeting rooms and lobby spaces as noted by the Lighting Consultant.

ALTERNATE NO. 3: VARIABLE ACOUSTICS IN HALL

Provide fully retractable sound-absorptive curtains that recess into the ceiling or into wall valances for use during speech-only events (such as Town Meeting and Cary Lectures). Provide architectural modifications, power wiring and controls as needed.

ALTERNATE NO. 4: DANCE FLOOR AT HALL STAGE

This Alternate improves the floor surface for dance without losing the acoustical properties for events such as orchestral music. Remove the existing maple flooring, subflooring and sleeper system from Battin Hall Stage. Provide replacement maple flooring and substrate over resilient pads to allow some flexibility in the floor. Install Mason Industries "Super W Pads" below replacement plywood substrate.

ALTERNATE NO. 5: AUDIOVISUAL IMPROVEMENT OPTIONS

Provide additional audiovisual equipment and system options as described by the Audiovisual Consultant (17 Oct 2012 report). Include wiring, cutting, patching, equipment rack closets and related components.

5A:	Additional Left & Right Loudspeakers for Battin Hall
5B:	Production and Communication Intercom System (Stage, Booth & Green Room)
5C:	Additional Wireless Microphones for Battin Hall
5D:	Portable Loudspeakers for Battin Hall
5E:	Replace Motorized Projection Screen in Battin Hall
5F:	Replace Broadcast Video Production System
5G:	Provide Simultaneous Audio in the Lobby
5H:	Provide Video Displays in the Lobby
5J:	Provide Video and Audio Monitoring in Green Room
5K:	Provide Audiovisual System in Ellen Stone Room
5L:	Provide Audiovisual System in Legion Room
5M:	Provide Audiovisual System in Civil Room
5N:	Provide Audiovisual System in Estabrook Hall
5P:	Provide Motorized Camera in Estabrook Hall
5Q:	Provide Audiovisual System in Bird Room
5R:	Provide Motorized Camera in Bird Room
5S:	Provide Video Distribution from Battin Hall to Meeting Rooms

ATTACHMENTS

Schematic Pricing Set of Drawings (dated 1 November 2012):

- Basement Level: Existing, Demolition, Preliminary
- First Floor Plan: Existing, Demolition, Preliminary
- Second Floor Plan: Existing, Demolition, Preliminary
- Attic Level: Existing, Demolition, Preliminary
- Roof Plan: Preliminary
- Site Plan: Existing, Demolition, Preliminary

Excerpts of 1 June 2011 Report for Supplemental Information:

- Appendix B – Photographs of Existing Conditions
- Appendix C – Historic Documentation
- Appendix D – Consultants' Reports
  - Structural Report
  - Mechanical Report
  - Electrical Report
  - Acoustical Report
  - Theatrical Report

Consultant Documentation for Renovation Study

- Preliminary Audio-Visual System Program Report (17 October 2012)
- Speaker Information: Central Cluster, Speaker Examples, Subwoofer, Side Speakers
- Chiller Noise Evaluation (31 October 2012)
- Trane Chiller CGAM: Sales Brochure and Equipment Catalogue Information

OTHER INFORMATION (IN PROGRESS BUT NOT YET COMPLETED)

Auralization of Battin Hall
Illustrations of Battin Hall

Isaac Harris Cary Memorial Building Renovation
1605 Massachusetts Avenue
Lexington, Massachusetts

Contract No. 13-06

PRELIMINARY ESTIMATE OF PROJECT COSTS

E-1 PRELIMINARY PROJECT BUDGET
Dated 12 December 2012
Prepared by Mills Whitaker Architects LLC

$1,536,683	A: Life Safety Improvements	(18.0%)
$3,969,763	B: Building System Improvements	(46.5%)
$3,030,680	C: Facility Usability Improvements	(35.5%)
$8,537,126	Preliminary Project Budget	(100%)

PRELIMINARY ESTIMATE OF PROJECT COSTS

E-2 SCHEMATIC DESIGN ESTIMATE
14 November 2012
Prepared by Daedalus Projects Inc.

BUDGET	GENERAL CONSTRUCTION COSTS
881,333	**A: Life Safety Improvements**
2,275,543	**B: Building System Improvements**
1,735,638	**C: Facility Usability Improvements**
4,892,514	Direct Trade Cost Subtotal
733,877	Design & Pricing Contingency (15%)
5,626,391	Direct Trades Subtotal
360,000	General Conditions & Requirements (18 Months x $20k per)
119,728	Sub-Contractor and Performance Bonds (2%)
61,061	General Liability Insurance (1%)
0	Permit Costs - Waived by the Town
308,359	Contractor Overhead & Profit (5%)
6,475,539	Construction Cost Prior to Escalation
415,082	Escalation Allowance - Start Construction August 2014
6,890,621	**Estimated Cost of Construction**

BUDGET	RELATED PROJECT COSTS
114,000	Allowance for Furnishings, IT Equipment, Signage
20,000	Allowance for Relocation Expenses
5,000	Allowance for Owner's Project Adminstration Expenses
781,782	Allowance for Architectural & Engineering Fees (11.36%)
	Historic District Certificate of Appropriateness
	Architectural Access Board Variance Process
	Architect + Structural + Mechanical + Electrical
	Consultants for AV, Acoustics, Civil, Landscape
	Design through Construction Administration
(50,000)	Deduction for A/E Services Already Performed
775,723	Preliminary Allowance for Project Contingency (10%)
1,646,505	**Subtotal of Related Project Costs & Allowances**
8,537,126	**PRELIMINARY PROJECT BUDGET**

$1,536,683	**A: Life Safety Improvements (18.0%)**
$3,969,763	**B: Building System Improvements (46.5%)**
$3,030,680	**C: Facility Usability Improvements (35.5%)**
$8,537,126	**PRELIMINARY PROJECT BUDGET**

Funding Request for Next Step / Design Services (Hold on Bidding & CA)	
$781,782	*Allowance for A/E Services Noted Above*
($50,000)	*Deduction for A/E Services Already Performed*
$731,782	*Subtotal of Remaining A/E Services (Incl. Bidding & CA)*
$548,836	***75% of A/E Services for up thru Construction Documents***

PRELIMINARY ESTIMATE OF PROJECT COSTS — 12 DEC 2012

DAEDALUS

Cary Memorial Building
Recommended Improvements
Lexington, MA

Schematic Design Estimate

November 14, 2012

Architect:
Mills Whitaker Architects, LLC
P O Box 750089
Arlington, MA 02475
(617) 876 7611

Cost Estimator:
Daedalus Projects Incorporated
Boston, MA 02111
Pawtucket, RI 02860
(617) 451 2717 // (401) 721 0811

SCHEMATIC DESIGN ESTIMATE — 14 NOV 2012

INTRODUCTION

Project Description:

- Two story meeting house auditorium with stage and seating balcony. Memorial lobby and meeting rooms make up the remaining public spaces
- Building is constructed with steel framing, concrete slabs, masonry bearing walls, steel truss pitched roof
- Overall building total gross square footage is 52,175gsf.
- Project consists of three distinctive categories:
  - A: Life Safety Improvements
  - B: Building System Improvements
  - C: Facility Usability Improvements

Project Particulars:

- Schematic Pricing Set Drawings and Summary of Recommended Improvements dated November 01, 2012 prepared by Mills Whitaker Architects LLC
- Contract No. 10-55; Final Report Isaac Harris Cary Memorial Building Evaluation dated June 01, 2011prepared by Mills Whitaker Architects LLC
- Preliminary Audiovisual System Program Report dated October 17, 2012 prepared by Acentech Inc.
- Chiller Noise Evaluation Report dated October 31, 2012 prepared by Acentech Inc.
- Speaker CX1295 Info from Fulcrum Acoustic
- Trane CGAM Chiller Info
- Detailed quantity takeoff from these documents where possible.
- Daedalus Projects, Inc. experience with similar projects of this nature.
- Discussion and review with Mills Whitaker Architects, LLC.

Project Assumptions:

- The project will be constructed under a single prime contract in accordance with the requirements of Massachusetts General Laws Chapter 149, including Filed Sub-Bids
- Bona fide bid returns from no less than three pre-qualified Filed sub-contractors for each filed Sub-bid
- Our costs assume that there will be competitive bidding in all trades and sub-trades i.e. at least three bids per trade or sub-trade
- The Total Construction Cost reflects the fair construction value of this project and should not be construed as the prediction of the lowest bid.
- The project will be constructed under a single prime contract
- Normal working hours
- No phasing
- No occupancy during construction
- Unit rates are based on current dollars. An escalation allowance to mid-point of construction has been included in these unit rates
- Escalation to the proposed start of construction in FY2015 has been carried as an allowance in the Main Summary

INTRODUCTION

Project Assumptions: cont'd

- Subcontractor's markups have been included in each unit rate. These markups cover the cost of field overhead, home office overhead and subcontractor's fee
- Design and Pricing Contingency markup is an allowance for unforeseen design issues, design detail development and specification clarifications
- General Conditions and Requirements value covers Sub-Contractor's bond, site office, temporary partitions, air quality control measures, daily and final cleanings, temporary egress, personnel toilets, protection barricades, temp heat
- Overhead and profit markup is calculated on a percentage basis of direct construction costs

Project Exclusions:

- Hazardous materials survey, report and removal
- Design fees and other soft costs
- Construction Contingency
- Interest expense
- Owner's project administration
- Construction of temporary facilities
- Relocation expenses
- Printing and advertising
- Specialties, fixtures and equipment
- Loose furniture such as desks, tables, files and cabinets
- Police details and street/sidewalk permits
- Site or existing condition surveys and investigations
- Utility company back charges during construction
- Testing and commissioning
- LEED certification processes

AEDALUS

Cary Memorial Building
Recommended Improvements
52,175 GSF

MAIN SUMMARY

DESCRIPTION			TOTAL	COST/SF	CATOROGY
Direct Trade Costs					
A: Life Safety Improvements			$881,333	$16.89	$1,266,690
B: Building System Improvements			$2,152,543	$41.26	$3,093,740
C: Facility Usability Improvements			$1,105,638	$21.19	$1,589,080
Direct Trade Cost Subtotal	**52,175 GSF**		**$4,139,513**	**$79.34**	**$5,949,510**
Design and Pricing Contingency	15.00%	$4,139,513	$620,000	$11.88	incl.
Trades Subtotal			**$4,759,513**	**$91.22**	**$5,949,510**
General Conditions and Markups					
General Conditions & Requirements	18 MTH	$20,000	$360,000	$6.90	incl.
Sub-Contractor and Performance Bonds	2.00%	$5,119,513	$100,000	$1.92	incl.
General Liability Insurance	1.00%	$5,219,513	$50,000	$0.96	incl.
Permit - $12 per $1000 on Bldg + Mech	1.20%	$4,038,527	$50,000	$0.96	incl.
Overheads and Profit	5.00%	$5,319,513	$270,000	$5.17	incl.
ESTIMATED CONSTRUCTION COST			**$5,589,513**	**$107.13**	**$5,949,510**
Escalation allowance to start of FY2015	6.41%	$5,589,513	$360,000	$6.90	incl.
ECC w/Escalation			**$5,949,513**	**$114.03**	**$5,949,510**
Alternates					
Alternate 1: Civil Room Accessibility			$69,000		
Alternate 2: Replace Existing Chiller			$166,000		
Alternate 3: Variable Acoustics In Hall			$172,000		
Alternate 4: Dance Floor At Hall Stage			$74,000		
Alternate 5: Audiovisual Improvement			$823,000		
ECC w/Alternates			**$7,253,513**	**$139.02**	

Cary Memorial Bldg Lexington SD Nov 14
Printed 11/14/2012

Main Summary
Page 4 of 18

SCHEMATIC DESIGN ESTIMATE — 14 NOV 2012

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
8	**A: Life Safety Improvements**				
9					
10	**A1. SITE IMPROVEMENTS / ACCESSIBLE PARKING**				
11	Demo landscape area, install new ADA parking bay	**175**	SF	$10.00	$1,750
12	salvage curbing, re-use, add new	**45**	LF	$30.00	$1,350
13	Renovate brick walk, add new				sidewalks
14	Resurface circular drive	**1,935**	SF	$2.50	$4,838
15	Parking space marking	**4**	SPACE	$15.00	$60
16	ADA w/logo and sign post	**5**	SPACE	$185.00	$925
17	Police w/logo and sign post	**1**	SPACE	$185.00	$185
18	Drop off area hatching	**175**	SF	$2.00	$350
19	Update directional and parking signage at the driveway	**1**	AL	$2,500.00	$2,500
20					
21	**A2. SITE IMPROVEMENTS / MAILBOX LOCATIONS**				
22	Relocate existing mailboxes, new concrete pad	**1**	LS	$1,500.00	$1,500
23					
24	**A3. SITE IMPROVEMENTS / SIDEWALKS**				
25	Reconstruct brick sidewalks in renovated areas adjacent to circular driveway to extent needed	**30**	SF	$50.00	$1,500
26	salvage brick for re-use	**30**	SF	$10.00	$300
27					
28	**A4. SITE IMPROVEMENTS / ACCESSIBLE RAMP**				
29	Remove deteriorated and non-compliant entry ramp, cheek walls, railings and recessed lighting	**100**	SF	$60.00	$6,000
30	New reconfigured fully compliant accessible ramp	**105**	SF	$150.00	$15,750
31	granite pavers	**105**	SF	$25.00	$2,625
32	granite cladding	**280**	SF	$30.00	$8,400
33	mill finish dual bronze handrails and concealed ramp lighting	**70**	LF	$350.00	$24,500
34					
35	**A5. SITE IMPROVEMENTS / BICYCLE RACK**				
36	Demo existing bike rack	**1**	LS	$1,000.00	$1,000
37	Provide color galvanized steel bicycle rack (20) bikes	**1**	EA	$3,000.00	$3,000
38	brick pavers w/conc base	**30**	SF		incl.
39					
40	**A6. ACCESSIBILITY TO ESTABROOK STAGE**				
41	Remove elevated slab	**125**	SF	$10.00	$1,250
42	short flight stair	**1**	FLT	$500.00	$500
43	Demo partition	**10**	LF	$50.00	$500
44	door	**2**	LEAF	$150.00	$300
45	Underpin etr egress stair ftn	**1**	LS	$2,500.00	$2,500
46	New ramp	**105**	SF	$125.00	$13,125
47	textured VCT flooring	**105**	SF	$10.00	$1,050
48	ptd h/rails	**50**	LF	$75.00	$3,750
49	Infill partition, Stage	**10**	LF	$100.00	$1,000
50	infill former door opening	**1**	LOC	$500.00	$500

SCHEMATIC DESIGN ESTIMATE — 14 NOV 2012

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
51	Door to Stage	1	LEAF	$2,500.00	$2,500
52	Patch, match and new floor finishes	1	LS	$250.00	$250
53	Prep and paint	1	LS	$500.00	$500
54					
55	**A7. ACCESSIBILITY TO BATTIN HALL STAGE**				
56	Remove door	1	LEAF	$150.00	$150
57	Remove former pit stair	1	FLT	$500.00	$500
58	Infill floor plate @ Hall floor level	1	LS	$1,500.00	$1,500
59	Modify door millwork, add new door w/automatic door operator	1	LEAF	$5,000.00	$5,000
60	New vertical wheelchair lift, 3 stop	1	LS	$25,000.00	$25,000
61	new floor opening in Main Stage floor	1	LOC	$5,000.00	$5,000
62	shallow pit in basement	1	LS	$5,000.00	$5,000
63	1hr rated hoist way walls	900	SF	$15.00	$13,500
64	rated landing door w/power operator	3	LEAF	$4,000.00	$12,000
65	rated exhaust duct, motorized damper, storm louver	1	LS	$5,000.00	$5,000
66	core ext masonry for duct penetration, weather seal	1	LS	$1,500.00	$1,500
67	Patch, match and new floor finishes	1	LS	$500.00	$500
68	Prep and paint	1	LS	$500.00	$500
69					
70	**A8. ACCESSIBILITY TO BIRD ROOM**				
71	Demo partition	10	LF	$50.00	$500
72	door	2	LEAF	$150.00	$300
73	New vertical wheelchair lift, 2 stop	1	LS	$25,000.00	$25,000
74	demo portion of Gallery floor plate, handrail	10	LF	$100.00	$1,000
75	suspended structural framing	1	LS	$5,000.00	$5,000
76	shallow pit in at Second floor	1	LS	$2,000.00	$2,000
77	hoist way walls	570	SF	$10.00	$5,700
78	landing door w/power operator	2	LEAF	$3,700.00	$7,400
79	Patch, match and new floor finishes	1	LS	$1,000.00	$1,000
80	Prep and paint	1	LS	$1,000.00	$1,000
81					
82	**A9. MODIFY DOORS FOR ACCESSIBILITY**				
83	*Remove door hardware and replace w/new accessible hardware - q'ties provided*				
84	Pair of doors	25	SET	$1,500.00	$37,500
85	single	12	LEAF	$750.00	$9,000
86	Automatic door operator, pair	8	PR	$6,000.00	$48,000
87	single	1	LEAF	$3,000.00	$3,000
88					
89	**A10. ACCESSIBILITY IMPROVEMENT / EXISTING HALLWAY RAMPS**				
90	New dual wood railing w/ptd mtl brackets	65	LF	$125.00	$8,125
91	Prep and paint	2	LOC	$500.00	$1,000
92					
93					
94					

SCHEMATIC DESIGN ESTIMATE — 14 NOV 2012

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
95	**A11. ACCESSIBILITY IMPROVEMENTS / WHEELCHAIR**				
96	Remove seat	**10**	SEAT	$100.00	$1,000
97	Infill floor level flush w/upper cross aisle	**2**	LOC	$1,500.00	$3,000
98	linoleum flooring	**30**	SF	$10.00	$300
99	perimeter curbing, safety rail	**20**	LF	$155.00	$3,100
100	Patch, match and new floor finishes	**2**	LOC	$500.00	$1,000
101					
102	**A12. SAFETY IMPROVEMENT / BALCONY AISLE HANDRAILS**				
103	Handrail at balcony seating, single level, powder coated - qty provided	**24**	LOC	$650.00	$15,600
104					
105	**A13. SAFETY & ACCESSIBILITY IMPROVEMENT / BACK STAIRS**				
106	Remove stair h/rail, stair guardrail	**11**	FLT	$1,250.00	$13,750
107	Remove guardrail at stair	**35**	LF	$750.00	$26,250
108	Stair h/rail, factory primed stl, field ptd	**11**	FLT	$2,000.00	$22,000
109	New guardrail	**35**	LF	$300.00	$10,500
110	Fire watch	**4**	DAY	$2,500.00	$10,000
111	Prep and paint	**2**	DAY	$1,200.00	$2,400
112					
113	**A14. SAFETY IMPROVEMENT / AUTOMATIC SPRINKLERS**				
114	Modify Existing Sprinkler Coverage	**52,000**	SF	$1.20	$62,400
115	6" Water Service	**-**	EA	Existing	$0
116	6" Backflow Preventer	**-**	EA	Existing	$0
117	6" Alarm Valve w/ trim	**-**	EA	Existing	$0
118	Zones Standpipe w/ FDV	**-**	EA	Existing	$0
119	Standpipe w/ FDV	**-**	EA	Existing	$0
120	Siamese Connection	**-**	EA	Existing	$0
121	Main piping:				
122	- 6"	**50**	LF	$40.00	$2,000
123	Seismic Restraints	**1**	EA	$2,100.00	$2,100
124	Shop drawings/hydraulic calculations	**1**	LS	$4,500.00	$4,500
125	Permits & Fees	**1**	LS	$1,500.00	$1,500
126	Lifts	**1**	LS	$2,000.00	$2,000
127	Scaffolding, staging, also used for lighting, painting; Battin Hall	**6,800**	SF	$10.00	$68,000
128	balcony level	**4,200**	SF	$20.00	$84,000
129	premium for Stage	**1,730**	SF	$20.00	$34,600
130					
131	**A15. SAFETY IMPROVEMENT / STAGE RIGGING**				
132	Cable mounted pendant operator	**1**	LS	$2,500.00	$2,500
133	Remove empty pipe batten, chains, sheaves, counterweight rigging	**1**	LS	$6,500.00	$6,500
134	Remainder of stage rigging improvements. $169k budget provided Feb 2011	**1**	LS	$102,500.00	$102,500

SCHEMATIC DESIGN ESTIMATE — 14 NOV 2012

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
135	**A16. SAFETY IMPROVEMENT / STAGE FIRE CURTAIN**				
136	Repair fire curtain operation, relocate electrical junction box	1	LS	$5,000.00	$5,000
137					
138	**A17. SAFETY IMPROVEMENT / STAGE SMOKE EXHAUST**				
139	Replace smoke hatch rigging, weatherize cupola, weather stripping at smoke hatch doors	1	LS	$7,500.00	$7,500
140					
141	**Div 26 Electrical**				
142	*Equipment Wiring*				
143	(A7) Feed and connection to new 3-stop wheelchair lift	1	LS	$2,000.00	$2,000
144	(A8) Feed and connection to new 2-stop wheelchair lift	1	LS	$2,000.00	$2,000
145	(A7) Feed and connection to new automatic door operator	4	EA	$850.00	$3,400
146	(A9) Feed and connection to automatic door operators	9	EA	$850.00	$7,650
147	(A7) Feed and connection to new hoist way vent and motorized	1	EA	$1,500.00	$1,500
148	(A16) Relocate power junction box for stage curtain modifications	1	LS	$1,500.00	$1,500
149	*Lighting & Branch Power*				
150	(A4) Demo existing recessed lighting at ramp	1	LS	$600.00	$600
151	(A4) Install new concealed lighting at ramp	1	LS	$4,500.00	$4,500
152	*Fire Alarm*				
153	(A7) Provide F/A connection to new hoist way vent and motorized	1	EA	$1,200.00	$1,200
154	*Reimbursable*				
155	Misc. unidentified unforeseen scope	1	LS	$25,000.00	$25,000
156	Fees & Permits	1	LS	$550.00	$550
157	Temp power & lights	1	LS	$2,500.00	$2,500
158	**A: Life Safety Improvements Total**				**$881,333**
159					
160					
161	**B: Building System Improvements**				
162					
163	**B1. EXTERIOR MASONRY REPAIRS**				
164	Replace rust-jacked window/door opening - quantity provided	13	EA	$3,000.00	$39,000
165	flash lintel and reconstruct brickwork	13	LOC	$2,500.00	$32,500
166	Rebuild and flash brickwork at water table; Exterior of stage area at North	60	LF	$200.00	$12,000
167	Reconstruct, flash and weep lower portion of brickwork; East & West walls of low flat roof areas in SE & SW corners	80	LF	$190.00	$15,200
168	remove rust and treat underlying steel beams	80	LF	$30.00	$2,400
169	cut and repoint interior brickwork to restore wall integrity	80	LF	$60.00	$4,800
170	Extend water table flashing, rebuild/reset brickwork; West Wing	30	LF	$50.00	$1,500
171	Replace rotted wood sill, new flashing; Boiler room window West	1	LOC	$750.00	$750

SCHEMATIC DESIGN ESTIMATE — 14 NOV 2012

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
172	Remove and reset granite plinth, new waterproofing, reassemble weep cavity; Monumental entrance stairs	2	EA	$3,500.00	$7,000
173	rake joints in granite steps, new backer rod and sealant	420	LFR	$40.00	$16,800
174	Repair screen wall at Chiller	825	SF	$3.50	$2,888
175	replace deteriorated brick	1	AL	$5,000.00	$5,000
176	replace wall cap w/new 2" thick bluestone and flashing	55	LF	$120.00	$6,600
177					
178	**B2. INTERIOR STRUCTURAL REPAIRS**				
179	Repair cracked basement concrete slab; West half below Stage	1,200	SF	$5.00	$6,000
180	Interior repairs and new waterproofing; East wall Estabrook Hall	80	LF	$150.00	$12,000
181	repair finishes and wainscoting	80	LF	$150.00	$12,000
182	Repair rusted steel and cracked terrazzo; first riser E basement stair outside Estabrook Hall	1	LOC	$1,000.00	$1,000
183	Repair cracks in concrete slab, repaint; Auditorium balcony level	5,060	SF	$5.00	$25,300
184					
185	**B3. EXTERIOR ROOFING REPAIRS**				
186	No anticipated work				
187					
188	**B4. IMPROVE & EXPAND TOILET ROOMS**				
189	Gut demo gang toilet room; Basement	2	RMS	$5,000.00	$10,000
190	Remove terrazzo and concrete floor, replace w/new	830	SF	$45.00	$37,350
191	New partition	150	LF	$100.00	$15,000
192	Toilet stall partition	11	STALL	$1,200.00	$13,200
193	Urinal privacy screen	3	STALL	$600.00	$1,800
194	Vanity counter	30	LF	$150.00	$4,425
195	Toilet accessories, ADA	11	FIX	$750.00	$8,250
196	Changing table	2	EA	$300.00	$600
197	Ceiling finish	830	SF	$10.00	$8,300
198					
199	**B5. OTHER PLUMBING IMPROVEMENTS**				
200	New drink fountain	1	FIX		Div 22
201					
202	**B6. REMOVE STEAM BOILERS / PROVIDE NEW EFFICIENT HYDRONIC BOILERS**				
203	R&R boilers	1	LS		Div 23
204	New gas supply lines from Mass. Ave	150	LF		By Utility Co
205	trenching / earthwork	150	LF	$35.00	$5,250
206	New Facility workshop partition w/in room footprint	25	LF	$150.00	$3,750
207	door	1	LEAF	$1,500.00	$1,500
208					
209	**B7. REMOVE UNDERGROUND OIL TANK**				
210	Remove 10,000gal. u/grd fuel oil tank	1	LS	$50,000.00	$50,000
211	New emerg. generator fuel tank	1	EA		Div 26

SCHEMATIC DESIGN ESTIMATE — 14 NOV 2012

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
212	**B8. REMOVE ORIGINAL FANS IN ATTIC / PROVIDE SOUND-ISOLATED AIR HANDLER**				
213	Remove fans and ductwork	1	LS		Div 23
214	New sound-proof room	1,520	GSF	$15.00	$22,800
215	Modify trusses, add new steel support for HVAC equipment	1	LS	$45,000.00	$45,000
216	demo boardwalk, provide new configuration	1	LS	$5,000.00	$5,000
217	new exterior louver and opening	2	LOC	$4,000.00	$8,000
218	New custom AHU and sound-lined ductwork	1	LS		Div 23
219					
220	**B9. PROVIDE ATTIC VENTILATION SYSTEM & INSULATE ATTIC**				
221	Remove fans and ductwork	1	LS		Div 23
222	New sound-proof partition and flooring systems	270	GSF	$20.00	$5,400
223	New sound-isolated ventilation system	1	LS		Div 23
224					
225	**B10. REDUCE INTERIOR NOISE OF AIR-COOLED CHILLER**				
226	Chiller sound attenuation package	1	LS		Div 23
227	Sealed interior fixed storm window panel, ½" laminated glass	10	EA	$2,500.00	$25,000
228					
229	**B11. OTHER HVAC IMPROVEMENTS**				
230	R&R heating units	1	LS		Div 23
231	Improve ventilation to Battin Hall	1	LS		Div 23
232	Battin Hall; new floor/wall openings for ventilation from attic, vertical shaft wall	10	EA	$5,000.00	$50,000
233	meeting rooms	3	RMS	$2,500.00	$7,500
234	New temp & humidity control to vault and storage areas	1	LS		Div 23
235					
236	**B12. REMOVE ELECTRICAL SWITCHGEAR FROM STAGE**				
237	R&R transformer and switchgear	1	LS		Div 26
238	Patch masonry walls, seal around new service	1	LS	$2,500.00	$2,500
239	Repair pavement	1	LS	$1,500.00	$1,500
240	Temp emerg gen power	1	LS		Div 26
241					
242	**B13. MODIFY EMERGENCY GENERATOR TRANSFER**				
243	Rework transfer switch	1	LS		Div 26
244	Reroute and extend exhaust piping	1	LS		Div 26
245					
246					
247					
248					
249					
250					
251					

SCHEMATIC DESIGN ESTIMATE — 14 NOV 2012

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
252	**Div 22 Plumbing**				
253	Misc. Pumps	-	LS	existing	$0
254	Trap Primer	3	EA	$1,500.00	$4,500
255	Water Service W/ Meter	-	LS	existing	$0
256	Hot Water Tank	-	LS	existing	$0
257	**Fixtures:**				
258	Water Closets P-1	12	EA	$4,400.00	$52,800
259	Urinal P-2	4	EA	$4,400.00	$17,600
260	Lavatory P-3	12	EA	$4,400.00	$52,800
261	Mop Sink P-4	1	EA	$4,400.00	$4,400
262	Water Cooler	1	EA	$5,200.00	$5,200
263	Kitchen Sink, Green Room	1	EA	$4,400.00	$4,400
264	Sink, Green Room	2	EA	$4,400.00	$8,800
265	Hose Bibbs HB	2	EA	$205.00	$410
266	Floor drains:				
267	- 3" FD-1 (bathroom)	3	EA	$925.00	$2,775
268	- 4" FD-1 (mechanical room)	4	EA	$1,075.00	$4,300
269	Roof Drains:				
270	- 4" RD-A		EA	existing	$0
271	Gas Piping	1	LS	$10,000.00	$10,000
272	Demolition	1	LS	$8,500.00	$8,500
273	First floor kitchen	-	LS	no changes	$0
274	Misc. Materials	1	LS	$7,500.00	$7,500
275	Seismic Restraints	1	LS	$3,250.00	$3,250
276	Testing	1	LS	$3,800.00	$3,800
277	Shop Drawing	1	LS	$5,500.00	$5,500
278					
279	**Div 23 HVAC**				
280	Boilers:				
281	- B-1,2 & 3	3	EA	$36,000.00	$108,000
282	Expansion Tanks & Air Separator	1	LS	$15,000.00	$15,000
283	Air Handling Units:				
284	- AHU - 20,000 CFM (auditorium)	1	EA	$100,000.00	$100,000
285	Pumps:				
286	- HWP-1 & 2 HP	2	EA	$5,500.00	$11,000
287	- CWP-1 & 2 HP	2	EA	$4,650.00	$9,300
288	Split Unit	1	EA	$10,000.00	$10,000
289	Exhaust fans:	1	LS	$12,500.00	$12,500
290	Humidity for Vault	1	LS	$5,000.00	$5,000
291	Fan Coil Units:VAV Boxes w/sound attenuators				
292	-VAV-	35	EA	$1,050.00	$36,750

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RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
293	Convectors Heaters				
294	- COV	**20**	EA	$750.00	$15,000
295	Register & Diffusers:	**1**	LS	$7,500.00	$7,500
296	Volume Dampers	**1**	LS	$4,250.00	$4,250
297	Fire Dampers	**1**	LS	$3,500.00	$3,500
298	Duct galvanized (modify existing)	**15,000**	LBS	$8.50	$127,500
299	Duct Insulation	**5,000**	SF	$2.85	$14,250
300	Seal Ductwork	**1,850**	LF	$1.20	$2,220
301	Sound Attenuator	**1**	LS	$50,000.00	$50,000
302	Chilled & Hot Water Piping (modify 2 pipe)	**1**	LS	$100,000.00	$100,000
303	Hot water insulation	**1**	LS	$35,000.00	$35,000
304	Equipment Hook-Ups:				
305	- Boilers	**3**	EA	$3,850.00	$11,550
306	- 4" Pump	**2**	EA	$15,500.00	$31,000
307	- 3" Pump	**2**	EA	$9,800.00	$19,600
308	- COV	**20**	EA	$840.00	$16,800
309	- VAV	**35**	EA	$945.00	$33,075
310	- 3" 2-Way Coils	**1**	EA	$3,850.00	$3,850
311	- 2-1/2" 2-Way Coils	**1**	EA	$2,750.00	$2,750
312	Chemical System	**1**	LS	$5,600.00	$5,600
313	Demolition	**1**	LS	$12,500.00	$12,500
314	Compressor Wrap	**1**	LS	$20,000.00	$20,000
315	Fuel Oil System	**1**	LS	$25,000.00	$25,000
316	Seismic Restraints	**1**	LS	$4,500.00	$4,500
317	Controls (new)	**1**	LS	$250,000.00	$250,000
318	Generator	**1**	LS	$8,500.00	$8,500
319	Remove fuel oil system	**1**	LS	$5,000.00	$5,000
320	Misc. Valves & specialties	**1**	LS	$4,000.00	$4,000
321	Testing & Balancing	**1**	LS	$9,800.00	$9,800
322	Rigging & Lifting	**1**	LS	$12,500.00	$12,500
323	Permits & Fees	**1**	LS	$4,500.00	$4,500
324	Shop Drawing	**1**	LS	$12,500.00	$12,500
325					
326					
327					
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330					
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332					
333					

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
334	**Div 26 Electrical**				
335	*Interior Electrical*				
336	*Demolition*				
337	Demo and make-safe	1	LS	$15,000.00	$15,000
338	*Gear & Distribution*				
339	Normal Power				
340	(B12) Demo transformer, provide new in new location	1	LS	$50,000.00	$50,000
341	(B12) Primary service duct bank	150	LF	$85.00	$12,750
342	(B12) Transformer pad	1	EA	$1,500.00	$1,500
343	(B12) Secondary service entrance	120	LF	$400.00	$48,000
344	(B12) Provide new main electrical switchgear	1	LS	$15,000.00	$15,000
345	(B12) re-feed existing panel boards/equipment	1	LS	$25,000.00	$25,000
346	Generator Power				
347	(B13) Rework existing ATS arrangement	1	LS	$7,500.00	$7,500
348	Miscellaneous work to existing switchgear and exhaust piping	1	LS	$25,000.00	$25,000
349	*Equipment Wiring*				
350	(B4) Feed and connection to new bathroom exhaust	1	LS	$1,200.00	$1,200
351	(B6) Feed and connection to boiler	3	EA	$1,200.00	$3,600
352	(B7) Feed and connection to new interior fuel tank pump for	1	LS	$1,200.00	$1,200
353	(B8) Demo existing Feed and connection to attic fans	1	LS	$650.00	$650
354	(B8) Feed and connection to attic ventilation fan	1	EA	$1,500.00	$1,500
355	(B8) Feed and connection to AHU	1	EA	$3,000.00	$3,000
356	(B14) Feed and connection to misc equip. yet to be defined...	1	EA	$10,000.00	$10,000
357	*Lighting & Branch Power*				
358	(B4) Lighting and branch power for new bathroom configuration	1	LS	$6,500.00	$6,500
359	(B5) Provide power for new drinking fountain	1	LS	$850.00	$850
360	*Fire Alarm*				
361	(B4) F/A device modifications for new bathroom configuration	1	LS	$600.00	$600
362	*Reimbursable*				
363	Misc. unidentified unforeseen scope	1	LS	$25,000.00	$25,000
364	Fees & Permits	1	LS	$2,500.00	$2,500
365	Temp power & lights	1	LS	$5,000.00	$5,000
366	**B: Building System Improvements Total**				**$2,152,543**
367					
368					
369					
370					
371					
372					
373					
374					

SCHEMATIC DESIGN ESTIMATE — 14 NOV 2012

RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
375	**C: Facility Usability Improvements**				
376					
377	**C1. IMPROVE BATTIN HALL SPEECH AMPLIFICATION YSSTEMS**				
378	Audiovisual system budget provided	**1**	AL	$167,300.00	$167,300
379	R&R speaker system	**1**	LS		Div 26
380					
381	**C2. IMPROVE BATTIN HALL STAGE**				
382	Permanent thrust stage, maple flooring; Main Hall	**540**	SF	$60.00	$32,400
383	wood panel surround	**135**	SF	$55.00	$7,425
384	short flight stairs, wall mtd h/rail	**1**	FLT	$1,500.00	$1,500
385	readily removable guard rails	**55**	LF	$175.00	$9,625
386	remove temp thrust stage	**1**	LS	$2,000.00	By Owner
387					
388	**C3. IMPROVE LIGHTING IN BATTIN HALL**				
389	Performance and house lighting	**1**	LS		Div 26
390	Motorized line set rigged from Gridiron	**6**	SETS	$7,500.00	$45,000
391	Scaffolding, staging, also used for lighting, painting; Battin Hall				Div A14
392					
393	**C4. RESTORE GREEN ROOM**				
394	Gut demo former dressing room; Basement	**2**	RMS	$2,500.00	$5,000
395	VCT flooring	**1,175**	SF	$6.50	$7,638
396	facility storage	**325**	SF	$1.50	$488
397	New partition	**150**	LF	$100.00	$15,000
398	door	**8**	LEAF	$1,200.00	$9,600
399	Vanity counter	**8**	LF	$150.00	$1,125
400	Kitchenette cabinets, c/top	**15**	LF	$350.00	$5,250
401	appliances	**1**	RM	$3,500.00	$3,500
402	Toilet accessories, ADA	**1**	FIX	$1,000.00	$1,000
403	Ceiling, sound isolation	**1,175**	SF	$15.00	$17,625
404	hinged hatch cover	**2**	EA	$1,500.00	$3,000
405	Plumbing fixtures	**1**	LS		Div 22
406	Lighting and power, emergency and existing	**1**	LS		Div 26
407					
408	**C5. IMPROVE ESTABROOK HALL**				
409	Remove gallery and picture booth floor levels, short flight stairs; Estabrook Hall south	**375**	GSF	$15.00	$5,625
410	Interior partition w/paneling to match existing	**30**	LF	$250.00	$7,500
411	Pair of closet doors	**1**	PR	$2,000.00	$2,000
412	New (2) short flight stair and landing, E. Hall to Lower Level	**2**	FLT	$2,500.00	$5,000
413	linoleum to stairs and landings	**200**	SF	$10.00	$2,000
414	wall mounted stair railings	**25**	LF	$65.00	$1,625
415	ptd decorative mtl guard railing w/wood cap	**10**	LF	$200.00	$2,000

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RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
416	Patch, match and new floor finishes	**375**	GSF	$5.00	$1,875
417	new raised floor levels, terrazzo	**145**	SF	$35.00	$5,075
418	New carpet to Hall	**1,000**	SF	$5.00	$5,000
419	Prep and paint	**1**	LS	$500.00	$500
420	Sound-absorptive tackable fabric covered wall panels, assume 50% coverage of E&W walls	**800**	SF	$20.00	$16,000
421	R&R electrical panels and wiring, restore original lighting	**1**	LS		Div 26
422					
423	**C6. REDUCE LOBBY NOISE LEVELS**				
424	Stretched fabric o/glass fiber panels; Entrance Lobby vaulted	**1,115**	SF	$50.00	$55,750
425	adjacent level ceiling areas	**1,600**	SF	$40.00	$64,000
426	New sound gasket to existing door; Auditorium, meeting rooms	**30**	SET	$500.00	$15,000
427					
428	**C7. OTHER IMPROVEMENTS**				
429	Refinish maple flooring; Stage, Auditorium	**6,790**	SF	$5.00	$33,950
430	Repaint concrete floors; balcony, back stairs, facility storage, boiler	**5,735**	SF	$2.50	$14,338
431	Prep and repaint, generally	**52,175**	GSF	$2.00	$104,350
432	R&R carpet, meeting rooms	**2,515**	SF	$5.00	$12,575
433	Lighting systems	**1**	LS		Div 26
434					
435	**Div 26 Electrical**				
436	*Interior Electrical*				
437	*Demolition*				
438	Demo and make-safe	**1**	LS	$25,000.00	$25,000
439	*Lighting & Branch Power*				
440	(C3) New lighting and controls in Battin Hall	**1**	LS	$175,000.00	$175,000
441	(C7) Lighting improvements to meeting rooms and lobbies	**1**	LS	$60,000.00	$60,000
442	*Audio/visual*				
443	(C1) A/V rough-in and power to Battin Hall (A/V, speech systems and other improvements)	**1**	LS	$100,000.00	$100,000
444	*Reimbursable*				
445	Misc. unidentified unforeseen scope	**1**	LS	$50,000.00	$50,000
446	Fees & Permits	**1**	LS	$4,000.00	$4,000
447	Temp power & lights	**1**	LS	$5,000.00	$5,000
448	**C: Facility Usability Improvements Total**				**$1,105,638**
449					
450					
451					

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RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
8					
9	**ALTERNATE 1: CIVIL ROOM ACCESSIBILITY**				
10					
11	Modify balcony side aisle stair	**2**	LOC	$1,000.00	$2,000
12	Cut out balcony central aisle stair riser, parge patch and paint	**24**	LOC	$500.00	$12,000
13	add new handrail	**12**	SEAT	$500.00	$6,000
14	Remove front row of fixed seating	**28**	SEAT	$100.00	$2,800
15	replace w/new removable seating	**24**	SEAT	$500.00	$12,000
16	Remove balcony railing, replace w/new code height railing	**70**	LF	$200.00	$14,000
17	General conditions and requirements	**1**	AD	$2,000.00	$2,000
18	Markups	**35%**		$50,800.00	$17,800
19	**Alternate 1: Civil Room Accessibility Total**				**$69,000**
20					
21					
22	**ALTERNATE 2: REPLACE EXISTING CHILLER**				
23					
24	Chiller sound attenuation package	**(1)**	LS	$50,000.00	($50,000)
25	Compressor Wrap	**(1)**	LS	$20,000.00	($20,000)
26	Sealed interior fixed storm window panel, ½" laminated glass	**(10)**	EA	$2,500.00	($25,000)
27	Chiller:				
28	- CH-1 120 ton	**1**	LS	$138,000.00	$138,000
29	Chilled Water Piping	**1**	LS	$10,000.00	$10,000
30	Chilled Water Insulation	**1**	LS	$3,650.00	$3,650
31	Underground Chilled Water Piping	**1**	LS	$5,500.00	$5,500
32	Equipment Hook-Ups:				
33	- Chiller	**1**	EA	$7,500.00	$7,500
34	Demolition	**1**	LS	$12,500.00	$12,500
35	Seismic Restraints	**1**	LS	$1,100.00	$1,100
36	Controls	**1**	LS	$10,000.00	$10,000
37	Misc. Valves & specialties	**1**	LS	$1,000.00	$1,000
38	Testing & Balancing	**1**	LS	$1,500.00	$1,500
39	Rigging & Lifting	**1**	LS	$3,000.00	$3,000
40	Permits & Fees	**1**	LS	$1,000.00	$1,000
41	Shop Drawing	**1**	LS	$2,000.00	$2,000
42	Feed and connection to new chiller	**1**	LS	$7,500.00	$7,500
43	Conc filled bollard	**2**	EA	$1,200.00	$2,400
44	Infill masonry wall opening after piping removal	**1**	LS	$1,000.00	$1,000
45	General conditions and requirements	**1**	AD	$10,000.00	$10,000
46	Markups	**35%**		$122,650.00	$43,000
47	**Alternate 2: Replace Existing Chiller Total**				**$166,000**
48					

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RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
49	**ALTERNATE 3: VARIABLE ACOUSTICS IN HALL**				
50					
51	Cut slot in ceiling at sidewalls between windows, reconfigure plaster ceiling, install motorized fully retractable fabric panel 10' long x 16' high	**6**	EA	$20,000.00	$120,000
52	General conditions and requirements	**1**	AD	$7,500.00	$7,500
53	Markups	**35%**		$127,500.00	$44,700
54	**Alternate 3: Variable Acoustics In Hall Total**				**$172,000**
55					
56					
57	**ALTERNATE 4: DANCE FLOOR AT HALL STAGE**				
58					
59	Remove stage flooring system	**1,730**	SF	$5.00	$8,650
60	New sprung stage floor system	**1,730**	SF	$25.00	$43,250
61	General conditions and requirements	**1**	AD	$2,500.00	$2,500
62	Markups	**35%**		$54,400.00	$19,100
63	**Alternate 4: Dance Floor At Hall Stage Total**				**$74,000**
64					
65					
66	**ALTERNATE 5: AUDIOVISUAL IMPROVEMENT OPTIONS**				
67					
68	5A: Additional left & right loudspeakers, Battin Hall	**1**	AL	$17,400.00	$17,400
69	5B: Production and communication intercom system	**1**	AL	$8,200.00	$8,200
70	5C: Additional wireless microphones, Battin Hall	**1**	AL	$36,700.00	$36,700
71	5D: Portable loudspeakers, Battin Hall	**1**	AL	$3,700.00	$3,700
72	5E: Replace motorized projection screen, Battin Hall	**1**	AL	$80,200.00	$80,200
73	5F: Replace broadcast video production system	**1**	AL	$83,900.00	$83,900
74	5G: Simultaneous audio, Lobby	**1**	AL	$5,000.00	$5,000
75	5H: Video displays, Lobby	**1**	AL	$37,800.00	$37,800
76	5J: Video and Audio monitoring, Green Room	**1**	AL	$6,900.00	$6,900
77	5K: Audiovisual system, Ellen Stone Room	**1**	AL	$8,100.00	$8,100
78	5L: Audiovisual system, Legion Room	**1**	AL	$8,100.00	$8,100
79	5M: Audiovisual system, Civil Room	**1**	AL	$8,100.00	$8,100
80	5N: Audiovisual system, Estabrook Hall	**1**	AL	$49,000.00	$49,000
81	5P: Motorized video camera, Estabrook Hall	**1**	AL	$14,000.00	$14,000
82	5Q: Audiovisual system, Bird Room	**1**	AL	$40,800.00	$40,800
83	5R: Motorized video camera, Bird Room	**1**	AL	$14,000.00	$14,000
84	5S: Video distribution from Battin Hall to meeting rooms	**1**	AL	$33,800.00	$33,800
85	Misc metal, supports	**1**	LS	$10,000.00	$10,000
86	Cut, patch, match and make good architectural fit-out	**1**	LS	$50,000.00	$50,000
87	Electrical rough-in and cabling	**1**	LS	$78,550.00	$78,550

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RENOVATION DETAIL

	ELEMENT	QUANTITY	UNIT	UNIT RATE	COST
88					
89	General conditions and requirements	1	AD	$15,000.00	$15,000
90	Markups	35%		$609,250.00	$213,400
91	**Alternate 5: Audiovisual Improvement Options Total**				**$823,000**
92					
93					
94					

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